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PRESIDENT.

GENTLEMEN,—I find myself placed in the honourable but somewhat difficult position of being the first speaker at a newly-formed scientific society. One thing, however, inspires me with confidence, the knowledge that my position has been caused more by my interest in the objects of the Society than by any special qualification for such a task. I shall therefore offer neither excuse nor apology for the matter I bring before you : but will simply beg all who hear me, to grant me that patience and sympathy to which, as your President, I feel myself to some extent entitled. We are met, then, this evening, to inaugurate a society of students of a great branch of science which, up to this time, has found no fit place for discussion in any other institution.

Without dwelling on the etymology* of the title of our Society, it is still requisite that we should have some clear conception of the real import and breadth of the science which we unite specially to study and elucidate.

By some writers (especially by Dr. Latham), Anthropology has been so circumscribed in its meaning as to imply nothing more than the

* "Anthropos, *man*, both as a generic term and of individuals, from Homer downwards ; in plural of *whole nations, mankind, the whole world*.

"Anthropos, Lat. *homo*, being *man*, as opposed to *beast*.

"Anthropologos, speaking or treating of *man*. Aristotle, *Nicomachean Ethics*, 4, 3, 31."—LIDDELL & SCOTT.

relations of Man to the mammalia. If we were to accept this meaning of the term Anthropology, we should still have a vast and important field of investigation. I, for one, am prepared to accept this as our first great duty; and what a vast leap will science have made when those relations are fully established! I do not hesitate to assert that the question of the relation of Man to the mammalia lies at the very root, and must be the basis, of the development of the science of Man. What time has not been wasted in idle speculations, assumptions, and theories respecting the history of Man! What volumes have not been poured forth from the press on the origin of the human family! and yet at this moment Man's place in nature is a matter of grave dispute. What a strange position for science in the nineteenth century, to be found ignoring the connection of Man with the physical universe by which he is surrounded! And yet I think I may say with truth, that nearly all the writers respecting the problem of Man's past life have ignored his connection with the lower animals, simply because they have not been able to see the exact relation. But is it not perfectly useless to go on longer, thus looking at Man as a being disconnected from the whole chain of organic life? I will not waste time in showing that progressive knowledge of Man's history was impossible, so long as we were working in such a fundamentally erroneous system of investigation.

But I would not have it supposed that the science of Anthropology has any right to be confined to such limits. Anthropology is, on the contrary, the science of the whole nature of Man. With such a meaning it will include nearly the whole circle of sciences. Biology, anatomy, chemistry, natural philosophy, and physiology must all furnish the anthropologist with materials from which he may make his deductions. While Ethnology treats of the history or science of nations or races, we have to deal with the origin and development of humanity. So while Ethnography traces the position and arts of the different races of Man, it is our business to investigate the laws regulating the distribution of mankind¹

These are more or less philosophic questions, and the public may be disposed to ask us, in this matter-of-fact age, what practical bearing our investigation can have on human welfare. To such an inquiry I would most unhesitatingly reply that, not only must we look to the anthropologist for all the reliable accounts we can ever have of Man's origin or early history, but that there is no science which is destined to confer more practical good on humanity at large than the one which specially investigates the laws regulating our physical nature. We

shall not stop when we have discussed the mode of man's origin or his development into what he now is, but we shall go on to inquire what are the laws by which he is at present regulated. Why, for instance, a race of mankind is arrested in development, or perishes, in one region and in another flourishes? What can be more practical than showing the causes which deteriorate or destroy the races of Europe, when removed to some other regions? How many thousands of our soldiers' lives would be saved annually if we studied temperament in the selection of men suitable for hot and those for cold climates? But I must not dwell on particulars. Suffice it to say that in whatever way we look on the study of the science of man we see good reason to believe that, as students of human nature, we cannot be dreaming theorists, but that every truth we discover must be for the benefit of humanity at large.

Whatever may be the conclusion to which our scientific inquiries may lead us, we should always remember, that by whatever means the Negro, for instance, acquired his present physical, mental, and moral character, whether he has risen from an ape or descended from a perfect man, we still know that the Races of Europe have now much in their mental and moral nature which the races of Africa have not got. We have hitherto devoted our attention almost exclusively to physical Anthropology, which Blumenbach first founded. We now require to investigate the mental and moral characteristics of mankind generally. The difference between the European and the African is not so great physically as it is mentally and morally.* We must, therefore, not neglect the psychological investigation, but must pursue it hand in hand with our physical investigations. Perhaps the psychological distinctions proceed from physical causes alone, but we shall be more likely to get light thrown on this difficult question if we conduct both investigations at the same time.

A serious charge has been made against the American School of Anthropology, when it is affirmed that their interest in keeping up

* In making this assertion I would not be understood as joining in the vulgar error that the Negro only differs from the European in the colour of his skin and peculiar hair. On the contrary, the physical differences are neither few nor insignificant. From the researches of that accomplished anthropologist, M. Paul Broca, we now know that the white substance of the brain of the Negro is of a different colour to that of a European, and that the *pia mater* contains brown spots, which are never found in the European. There are many other physical differences which our minute researches will bring to light. Whether all these physical differences, with the consequent mental and moral distinctions, combined with the asserted fact that nowhere does there exist a permanent hybrid Euro-African race, are of sufficient value to justify us in classifying the Negro as a distinct species, is a point on which, for the present, I hazard no positive opinion.

slavery induced the scientific men of that country to advocate a distinct origin for the African race. For myself, I believe such a charge to be a gross calumny. If it could be demonstrated that the Negro was descended from the ape only a few generations ago, it would not at all alter the fact that at present he is a man, and has enough in common with ourselves to make us know that his parentage can be no excuse for using him cruelly. Or supposing that the Oran-ûtan is, as the Dyaks believe, a degenerated species of man, it is equally certain that he is not now a *man*, and has not the same claims on our sympathy as the most degraded savage.

I would therefore express a hope that the objects of this Society will never be prostituted to such an object as the support of the slave-trade, with all its abuses; but at the same time we must not shrink from the candid avowal of what we believe to be the real place in nature, or in society, of the African or any other race. It will be the duty of conscientious anatomists carefully to record all deviations from the human standard of organization and analogy with inferior types, which are frequently manifested in the negro race. These observations should be made solely as to the existence of the facts themselves, and without any reference to the theories that may be founded on them: Future generations will thank us more for the establishment of good reliable facts than for any hap-hazard speculations. At the same time I would not say a word against the generalizer. In a society like ours we want thinkers as well as observers. We should give every encouragement to the accurate reasoner, as it is to him we must look for the laws which can be deduced from our illustrations and accumulation of facts.

I should have liked to have given this evening a sketch of the present state of Anthropology; but I shall only be able just to touch on some points which may throw light on the best means for its future development. In the first place, I think it will be well if we can fully realize the exact position in which we now stand, as we shall then be better able to appreciate the amount of work that is before us. I beg, however, that no one will interpret my opinions to be in any way the opinion of the Society generally.

As far, then, as I am able to judge, the science of Anthropology is not only in its infancy, but as a *science*, it hardly yet has any existence. Why we should have good reliable facts and systematic collections of the remains of all animals except man, is a psychological phenomenon of great interest, but one which I must not stay to investigate: but there can be little or no doubt of the fact itself. Dr. Morton in

America attempted to remedy this, and others have followed his example in this country, but what has really yet been done is comparatively useless for want of some general system and agreement between anthropologists. Without entering into the value of craniometry in elucidating some of the problems of man's physical nature, I would still insist that the facts are hardly yet at hand by which we can give any decided opinion on this point. During the last few years, much has been done, both in this country and on the continent, in illustrating the crania of different races; but no general system of measurement, based on some definite principle, has yet been successfully promulgated.

However valuable illustrations of crania may be, they are insignificant compared to the knowledge we derive from casts of the interior of the skull cavity. The importance of a collection of casts of the brain cavity of monkeys, anthropoid apes, and man, has induced Mr. Flower, of the Royal College of Surgeons, to undertake the duty of making such a series. Such a collection of casts will ere long bring about "the beginning of the end" of a very long controversy, which might be interminable without thus appealing to actual demonstration.

On such an occasion as the present, I think it will generally be admitted that we ought to consider the method which we should adopt in our investigation. The exact plan by which Anthropology should be studied has never yet been settled: but we must be all agreed on this point, or we shall fail to carry out the objects of the society. The great obstacle to the progress of Anthropology has been *a priori* assumption, not to say popular superstition. But if we are to make any progress with the science we are met to cultivate and develope, we must give up all such idle speculations as have been indulged in by nearly all ancient and modern writers on this subject. In the long-expected work "On the History of Human Folly," a most important chapter will be occupied in treating of the absurdity of the gratuitous assumptions and speculations on the origin of mankind. When we look back on the number of writers of learning and talent on the origin of humanity, it is perfectly wonderful to see the amount of ability which has been wasted, and all apparently from not investigating the subject by the only method that can lead us to any satisfactory result, viz., inductive and deductive reasoning. The metaphysician and others have attempted to prove the logical necessity of the unity of mankind. But is the origin of Man to be settled by the metaphysician? If so, we have nothing more to do. But what has been the result of such a state of things? Exactly what was to

be expected. While rapid progress has been made in every branch of science, the so-called "Science of Man" has remained exactly where Herder left it nearly one hundred years ago. It is evident, therefore, that as long as we continue to wildly speculate, no advance can be made, and we can never have a *science* of Man until we take the trouble to use a scientific method of investigation. We must, therefore, make up our minds to give up all assumptions and wild theories, and remember that the great problem of Anthropology can only be settled by *facts*, and not by abstract logic. It may be we shall have to wait for years before we shall get any true light as to the real origin of Man: but we must abide our time. We should always bear in mind that the man who believes nothing is nearer the truth than the one who believes in errors.

But judging from the researches that have been made during the last few years, there is some faint hope that we shall not have to wait long before a really rational theory of Man's origin can be advanced. The present time is most opportune for the formation of a society like ours. The question of the origin of Man which, owing to assumed vested interests, ignorance and superstition, had long been a forbidden subject of controversy, has now forced itself not only on the attention of men of science, but on that of the public generally. We have only to recall the episode of John Hunter and his "thousands of centuries," to see what a vast change has taken place during the last few years. Thanks to the geologist, we have *facts* to shew the existence of man at a period so remote that none dare assign even an approximative date. Indeed, in the present state of our knowledge, it were idle speculation to do so. The public mind is not accustomed to take sudden leaps, and we must, therefore, be content to wait for a time until the popular mind is prepared fully to understand the immense extent of time which the flint implements in the drift and other phenomena really indicate.

To show the absurdity of attempting to fix even an approximative date for the appearance of Man upon the earth, I quoted, in a paper read before the British Association at Oxford in 1860, the opinion of one of the most recent writers on the History of Mankind on this subject. Professor Waitz thinks to reconcile the hypothesis of the unity of origin of mankind (for which he is an advocate), that Man could not have been on the earth less than thirty-five thousand years, and that possibly he may have appeared as long ago as nine millions of years! Of course, such an opinion created a hearty laugh from those who were assembled in the divinity schools on that day. But Professor

Huxley has just asserted, "if any form of the doctrine of progressive development is correct, we must extend by long epochs the most liberal estimate that has yet been made of the antiquity of man."* If any plea were wanting for founding this society, I would ask you to look at the different degrees of progress which the sciences of Geology and Anthropology have made during the last fifty years. While geologists have been dealing with demonstrated facts, most anthropologists have been idly speculating, and others employing themselves in the still less profitable task of attempting to show the identity of black and white by metaphysical subterfuges totally unworthy, not only of science, but of all serious consideration. Geology has within a few years become a great science, and the most ignorant or superstitious dare not assail her conclusions. But Anthropology has been totally stationary during this time. And why? Because the same *method* of inquiry has not been employed. We should, therefore, take a lesson from the geologist, and found a science on *facts*. This course seems so self-evident, that I ought to apologize for even mentioning such things, did I not know that one branch of Anthropology, *i.e.* the science of nations, or Ethnology, has been attempted frequently to be based on historical statements, etc., and we have had the "Natural History of Man" written before we had any reliable facts on which to found that history.

Besides this, we find that the ethnologists have encumbered their science with all sorts of terms which are based merely on vague historical data, and frequently on myths. The whole of the nomenclature of the ethnologists is full of terms, the use of which imply a theory. We must be careful to avoid, as far as possible, the error into which they have fallen. I would strongly urge the necessity of rigid care in the acceptance of historical statements as a basis for our own science. The only portions of history, ancient or modern, which are of any use at all, are the observations which were made by contemporary historians. But these statements even are generally too vague to be of any value for science. As we do not now accept the opinion of any one traveller as the basis of science, so must we be careful not to accept the authority of any one historian. All our facts, as far as possible, should admit of verification, but with the exception of some of the statements in history relative to astronomical science, these statements do not admit of verification; and we must, therefore, not look to the historian to throw any great light on our science. We must study Archæology as a science, and merely use history as a

* *Man's Place in Nature*, 1863, p. 159.

commentary. Ethnology, as now understood, has quite outgrown the narrow basis on which it was started. We must, therefore, enlarge and deepen our foundations; collect a range of facts, and extend our sphere of observation, before we begin to fight some of the most popular ethnological questions of the day. Whatever might have been the value of Dr. Prichard's works in their generation, it is certain that is no little disgrace to our science that these works are still the text-books of the day. It is true, however, that neither in France nor Germany are the text-books on this subject of a much more satisfactory character. All systematic works have one fault in common; that they leave the great foundations of the science entirely based on conjecture, while they discuss subjects which are at present of little consequence, and only tend to produce party warfare. An attempt has been made to divide all ethnologists into two parties, monogenists and polygenists: and each party is supposed to be bound to support the side to which they may be espoused. Such a state of things is most unfortunate for science, and no progress can be made until we give up such fruitless skirmishing. If we take a glance at any of the great physical questions connected with Man, we find that nearly all is speculation—much, simple mythology. If we go to Borneo, we get the myth of the creation of man from the dust of the earth, and that woman was made from the great toe of the man; and the Thibetians believe that mankind descended from the ape.* Both hypotheses are very imaginative, and perhaps have about the same amount of actual facts to support them. What we know is, that transformation of species has yet to be proved. No one (except Agassiz and his *confrères*) will deny the possibility of the descent of man from the ape by some unknown law of development: but the admission does not in the least give any countenance to such being at all proved by existing data. Oken's origin of man from the scum of the sea belongs to the same category of assumptions, and the speculations of Reichenbach† also require facts to support them. He says, "The soil in which the first man originated was an animal, and his first mother was an animal, and his first nourishment was the milk of an animal." Very likely this was so; but we shall want more evidence than this author gives us to accept such a statement for anything more than an hypothesis—supported by presumed analogy, but not by facts. We shall probably see what must have been the law of Man's origin long before we shall be able to

* Link, *History of Mankind*.

† Über die Entstehung des Menschen.

demonstrate it. It will be our duty to test these hypotheses one against another—not by our own preconceived notions and theories, but by all the facts we can collect. We must always be ready to change our theories to suit our facts. As knowledge advances, it is absolutely necessary that the theories of every honest scientific man should change. True science cares nothing for theories, unless they accord with the facts. An hypothesis may be all very reasonable and beautiful, but unless it is supported by facts, we should always be prepared to give it up for one that is so supported; and as knowledge advances, so must the true scientific man change his theories. We should endeavour to be careful not to fancy we aid the cause of science when we absurdly give our support to theories that no longer can be reconciled with established facts. It will be a great misfortune to science, should students of nature ever become thus fondly wedded to their theories. Such conduct is to be expected from the ignorant, and consequently bigoted; but cannot be adopted by real seekers after truth. No doubt it is a weakness of our natures thus to cling to the theories of our youth; but we must be careful not to yield unreasonably to the charms of a first love. In our science, which, at present, is nearly all hypothesis, I think there is great need of this caution, and that we shall do well all to remember, that instead of having any cause of shame in giving up our unsupported theories, that it is something of which to be proud.

But having said so much, I ought, perhaps, to add, that it is the best plan to be very cautious in forming such positive theories, until we are warranted to do so by actual facts. We want speculation; but we must be careful always to make a rigid distinction between verified facts and speculation. It is the custom of the public to assert that a certain scientific man holds a certain opinion, theory, or hypothesis; but we must do all we can to let the thinking public know that such hypothesis is only held until we can get one that will more fully explain the facts. It is frequently asserted by scientific men on the Continent, that our cultivators of science are “priest-ridden,” and afraid to give utterance to their real scientific opinions. I will not stay to inquire into the amount of truth in the assertion, or to show that its general application is a gross calumny. I hope the members of this society will join with me in endeavouring to prove that many of our Continental friends entirely mistake our honesty in fancying that “the fear of public scandal,” (as they call it), in any way daunts the most free and open expression of honest opinion.

I have touched on the hypothetical views of Man's origin, and

would wish distinctly to state, that it is not only the unity of origin from a single pair that is a pure hypothesis, but that the somewhat popular view of the plurality of original pairs, or the creation of Man in Nations, (as Agassiz and many others hold,) rests on no better evidence than the hypothesis of unity of origin. It has been sometimes asserted that there is less difficulty in assuming the plurality of origin than to explain how all races could have descended from one pair: but science has nothing to do with what is the easiest explanation, we want to know what is the truth.

The accomplished and zealous President of the Ethnological Society, in one of his recent papers, writes, "that mankind consists of many originally created species, and that the hypothesis of unity of races is without foundation."* Mr. Crawford might have added, I think, with equal truth, that the hypothesis of "many originally created species" is equally without foundation.

It has recently become so much the fashion to assert original difference to explain every phenomenon connected with Man, that it has been found necessary to continually increase the number of protoplasts, until the last writer on the Classification of Man (Mr. Crawford), assumes upwards of forty distinct species. I think it well to quote the words of our great countryman, John Stuart Mill, on the subject. He goes so far as to say, "Of all the vulgar modes of escaping from the consideration of the effects of social and moral influences on the human mind, the most vulgar is that of attributing the diversities of conduct and character to inherent original natural differences."† All that can safely be asserted against the unity of the origin of mankind is, that there is no existing race or species which can be assumed to be the type of the original Man. The assumption of some ideal type of man from which all existing forms have arisen, is not based on any scientific data, and is merely speculation. It is a matter of uncertainty whether we shall ever be able to demonstrate by actual facts the *modus operandi* of Man's origin, but we may be able to ascertain the laws to which he owes his birth.

The remarks I have made respecting the necessity of having facts to support an hypothesis, find an apt illustration in that mythical and poetical subject—the *place* of Man's origin. There is not a continent, and hardly an island, which has not been asserted to be the birth-place of man. Not having facts to support any of these poetical dreams, we need not now concern ourselves with such a subject.

* Transactions of Ethnological Society, vol. i, p. 2. New Series, 1861, p. 554.

† Principles of Political Economy, vol. i, p. 390.

We have some other questions that must be settled, before we come to the place of Man's origin; and in the meantime we may decline, as scientific students, to found any theory on mere tradition. Yet it is strange we should have a learned writer like Baron von Eckstein* fixing the place of man's origin. Writing only in 1860, he says, "Everything points to the region of the sources of the Indus, Oxus, Jaxartes, and Serika rivers. There or nowhere is the cradle. This suits the historian, the politician, the geologist, the geographer." But does this spot suit the anthropologist? If we agree with the geologist, the baron's dogmatic assertions might be of some value. Those friends of fiction will be greatly interested in a work by Dr. Schulthess,† in which he believes to prove most conclusively that Africa was the original Paradise. Whether it was in the neighbourhood of the Gaboon he does not say. Equally powerful claimants there are for different parts of Asia and the island of Ceylon. It is evident, therefore, that tradition is not so positive as to the place of Man's origin as some imagine.

It is necessary to decide the scope and object of our Society. We look upon Anthropology as the Science of Mankind. We shall therefore treat of every thing that will throw light on the physical or psychological history of Man. It will be essentially our object to trace the primitive history of Man. But in doing this we require the aid of the geologist, archæologist, anatomist, physiologist, psychologist, and philologist. It is, therefore, nearly impossible in the present imperfect state of our science to be master of all these subjects. The time also has, perhaps, not yet come when the different sciences can all be brought to bear on the history of mankind. It is frequently asserted that we want more observation before we can generalize on this subject. But I doubt if this be so. We have abundance of observations and facts of a certain kind; but the observations are valueless, because nearly all travellers only see what suits their own preconceived notions. Facts, too, we have in abundance, but they are not of the right sort. For science we must have exact details; but this is what we have not got. It must be our object to decide what are the facts we most want, and collect information on a systematic plan. No country has during the last three hundred years published more works of travel than ours, and no people have had the same opportunity of studying the different races of man: but, unfor-

* Baron von Eckstein in *Zeitschrift für Völker psychologie*; edited by Dr. Lazarus and Dr. Steinthal. Vol. i. part iv. 1860.

+ *Das Paradies*. Zurich, 1816.

tunately, little of all these writings and observations are of any value to science. While men at home were dealing in assumptions, and performing the part of special pleaders for their own pet dogmas, we could not expect anything else from travellers. It must be our object to get travellers to give up all theories, and simply collect reliable facts. Another cause of the comparative uselessness of the accounts of travellers is the want of honesty in telling what they really saw. Some fear shocking public opinion, while others indulge in exaggerations for the sake of the excitement which their narrative produces in the reading public. Missionaries have had grand opportunities of studying the characteristics of uncultivated nations, but their narratives are proverbially useless to science by reason of the self-glorifying accounts of the results of their own labours. Some of the mildest people in the world have been called "cannibals" and "lowest savages," when there has not been a shadow of truth in the charge. But, generally speaking, travellers have not been to blame; the fault lies with the cultivators of science at home.

And here I must touch on a subject of deep importance. We have to found a great science, and we shall want labourers abroad as well as at home. These labourers to be of any real service to science must receive some preliminary training. They must have all nursery tales eradicated from their minds, and be taught to seek for facts and search for truth. The Anthropologist requires training, like the botanist, the zoologist, or the geologist. But this training can never be effected by a society like our own. Indeed such a scheme does not come within our object. It must, therefore, be done by the public. The Government must give to Anthropologists the same aid which it renders to the geologist. Surely it is not reasonable that we should care more for the extinct than for living forms of animal life. While it is the duty of Government to aid the study of the Anthropologist, it is also the duty of our Universities to make the Science of Mankind a special subject of study. I look forward to the day when all our Universities shall have professors whose sole study shall be the philosophy of mankind. In the political world the subject of "race" has been playing so prominent a part that the dullest legislator must begin to see that political institutions are not simply the result of the statesman's genius, but that there are higher laws in operation, to counteract which all his efforts are useless. It is true that in the present state of our science we can offer no positive dogmas to the politician; but we see enough to know that laws are secretly working for the development of some nations and the destruction of others; which it is both the province and the duty of the politician to assist in

discovering. We must go on working as best we can, and ere long the public will see that it is for their own interest, and for the benefit of humanity at large, that the scientific study of Man shall be made a part of national education.

While, however, State aid is certain to come in time, we must at present appeal to private enterprise to assist in carrying out what is, to a great extent, national work. And one of the best means of helping to do this is by the establishment of a good and reliable museum. In this country there is really no ethnographical museum which is at all worthy of the British nation. With better opportunities than any other people, our ethnographical museums are still very inferior and imperfect. It will be our duty not to care so much for collecting a museum of our own, as to assist in forming one that shall be worthy of the country. How this can best be carried out must always be a matter for earnest consideration. In the meantime this society will commence forming a museum; but I think we ought always to be ready to give up anything that will be for the benefit of the public or the cause of science.

But there are other duties which will demand our more immediate attention; and I will briefly touch on some of these, as it may serve to illustrate how we purpose to carry out the work we have undertaken.

Much of the future success of the Society will perhaps depend on the character of the papers read at our meetings. I suggest, therefore, that, as far as possible, it will be advisable, in the present confused state of our science, that we should give preference to such papers which have for their object the removal of some of these mysteries. To-night we will discuss whether we shall go on playing with the so-called science of man, or whether we shall be content to give up all dogmas, confess our ignorance as to knowing anything about the laws regulating man's origin or development, and be willing to begin *de novo*, only basing our opinions on actual demonstrable facts, and arguing solely from the logical inference from such *data*. If we decide on our method to-night, we can then go on to discuss at our next meeting the terms we agree to use. There is an absolute necessity we should endeavour to agree on this point, for science can make no advance, while hardly two persons use such an important word as "race" in the same sense. As a new science, which we hope to see popular, I trust that an endeavour will be made to render the terms we use as simple as possible. We had better spend the whole of this session in debating this subject, in order to come to some general agreement, than rush madly on to the discussion of

the subject, which we cannot argue with any profit, until we have settled the meaning we each attach to the terms we shall use in our warfare. Various subjects will be brought under consideration, and amongst others the question as to how far it would be advisable to make use of the terms of the phrenologists in our minute descriptions of the crania of races of man. We, of course, cannot accept any such dogmatic system as a basis of work; but we must see how far it will be advisable to adopt the nomenclature of the phrenologist for describing human crania. The *Manual of Ethnological Inquiry*, put forth by the British Association, has already recommended the expediency of using the terminology of the phrenologist, and such a recommendation has, some think, tended to retard the rapid progress of craniology. Phrenology, as a system, we cannot accept; but we are bound to inquire how far it is founded on true principles. I presume that we shall nearly all be disposed to admit fully that the form and quality of the brain in some way indicates the intellectual and moral character of the man; but we must not rush hurriedly and build up a system, or accept any system which is founded on this general admission. The phrenologists have hitherto paid too much attention to mere form, and not enough to quality, which is quite as important. Nor must we accept such a dogma as that propounded by Liebig, that the cerebral action must be proportionate to the mass of the brain. On the contrary, we must seek for a solution of many of the contradictions which surround this subject, in the minute histological anatomy, or in the chemical constituents of the brain of the different families of man and the lower animals. Schlossberger has already affirmed that there is less fat and more water in the brain of children than of adults. If we take this with the dogma of Moleschott, that "Without phosphorus there is no thought," we shall see the value of chemical and microscopical investigation on this subject. The exact relation which thought bears to some form, quantity, and quality of the brain, is as yet uncertain; all we now know is, that they are connected: but it is left for us to discover the exact relations.

It is not a little remarkable, that amongst all the journals devoted to different branches of science, there has as yet been no independent journal for the interchange of communications from anthropologists in different parts of the world. The advent of our Society will enable such a journal to be founded. This journal will, however, not be under the influence of the Society, further than engaging to print our official reports. It will be for the use of, and a medium of communication between all anthropologists. I need hardly say how valuable such a journal will be to us as a Society, and indeed for

science generally, if it is only conducted in that spirit of moderation, fairness, and freedom from all party or personal bias, which is at this time demanded.

In this Journal the reports of our meetings will be published quarterly; and it is hoped that by so doing there will be a constant and sustained interest taken in the works of the Society. Long memoirs will be only given in abstract in the journal, but they will be published at length at the discretion of the council, and delivered to the fellows in a separate publication.

In selecting works to be translated, we shall be guided by a desire to introduce books into this country, which, while being useful to the student and teacher, will at the same time help to give the reading public a better appreciation of the object and extent of anthropological science. The council will not simply favour the translations of works, in the opinions of which they agree, but will aim at introducing those works which best represent the prevailing opinions respecting Anthropology on the Continent. The importation of foreign ideas and modes of treating our science cannot fail to produce beneficial results.

Another important feature in our plan is the appointment of local secretaries in different parts of the world. It is well known that there are many who are anxious to render some assistance to science, but do not know what to do, as they are ignorant what sort of information science requires. If our local secretaries are carefully selected, and proper questions and instructions are sent to them, I look forward with much hope to the benefit that will accrue to science from such a plan. The council invite the Fellows of the Society to nominate any gentlemen for local secretaries whom they believe willing to render service to the society and to science.

Such, then, are a few of the most important self-imposed duties we have undertaken. I have heard it stated that there are societies now existing in the metropolis who do the same work. But such a statement is made in ignorance of what we intend to do. I do not hesitate to affirm that we propose to do work which is not even attempted by any existing society. Whether such existing societies could have been moulded to do the work we have undertaken is another matter. The question as to whether we have done well to found this society is one which cannot be answered at this time. We must be content to leave that to the future historian. We ask for judgment, not on the promises we make, but on the work we perform. Whatever be our future, I believe that the founders of this Society are fully sensible of the vast work they have undertaken, as well as of

its importance. They are fully conscious that to carry out their duty well, it is necessary to have a very considerable number of members. The first meeting of the friends of this society only took place about six weeks ago, and now we have 120 members. So far, therefore, all has gone well. More yet remains to be done; but the council trust that the members will make the society known amongst their friends. Support will be sure to come when it is seen that we really mean work; and in the meantime let all strive to gain the number of members by which we can work the society with effect and with benefit to the cause of truth and science.

It is true that some who were naturally thought to be interested in our work have not yet joined; but nearly, without exception, every one who has been asked to help us has admitted that, if we carry out our prospectus, we shall be supplying what is one of the great wants of the age. Nearly all have admitted the desirability of our plan; but some have contended that we should never gain support enough to carry out what we propose. By the prospectus it will be seen that we are essentially a publishing society. The translation of foreign works alone is an undertaking of immense importance in the present state of science. We shall endeavour to print works of such value that no public or private scientific library will be complete without them. What a vast *impetus* will these works, with a quarterly journal, give to the study of Anthropology! Whether this be so or not, our reward will be that we give to the public an opportunity of studying Anthropology, which they have never yet had. The more support we gain the greater will be the success of our labours.

I know only of one serious objection (if such it can be called) which has been made to our work, and it is "That the time has not yet come for the formation of such a society; and that we should wait until the public mind was ready to take more interest in what we do." But are scientific men to wait for the public to take an interest, before they begin to clear away the misty traditions in which their science is enveloped? Are scientific men to wait patiently until antiquated prejudice is removed, by some supernatural agency, from the public mind, before they begin to study questions which are of interest, not to the few initiated, but to the whole civilized and indeed uncivilized world? No! it is our duty to clear away the encumbrances with which dogmatism and ignorance have enveloped the study of Man, and we must show the public that the origin of Man is a question of physical science which can have no light thrown on it by authority or tradition.

We shall then have to go on to show that the attempt to discuss

at present the unity or plurality of origin for mankind is really nothing better than child's play. We shall always remember that even unity of species does not necessarily include unity of origin; and that with plurality of existing species, the *possibility* of the unity of origin cannot be denied. It has been stated that the promoters of this Society were composed of "advanced liberal ethnologists." Such a statement I believe to be entirely an error. I presume the "advanced" ethnologists must be those who can discuss the unity or plurality of man, and those who can write learned papers and take part in minute discussions on the classification of man! These are the advanced ethnologists, who are certainly discussing questions very much in advance of myself or my associates.

For years past there have been public discussions going on as to the unity of man's origin. As matters now stand, this discussion is simply arguing in a circle. It cannot yet be fairly discussed on scientific grounds at all. Before any scientific discussion can be held we must know far more of the laws regulating the intermixture of the different races of man. What we know on the subject is as yet hardly worth calling science. M. Broca, the accomplished secretary to our sister society in Paris, has stated the known facts; but the question is still in a most unsettled and unsatisfactory state.

Many intelligent persons now believe that Ethnology merely attempts to solve the question whether there was unity of origin for the different races of man. We shall therefore do well to make it known that (for the present) Anthropology is not in a condition to give any answer to that question. There are a host of subjects which have to be decided before we are in a position to give even an approximative answer to the question of the unity of mankind. The unity of mankind is an article of faith with many estimable persons, whose opinions deserve respect, and therefore, as such, we dare not, and ought not, to discuss it. We can only discuss it as a scientific hypothesis, and as President of this Society it will be my duty not to allow this dogma to be attacked or defended, except as a scientific hypothesis. I shall apply the same check to any other article of faith, and not allow it (as such) to be discussed in this society. The theologian (as such) has no right to interfere with the conclusions of physical science; and the man of science (as such) can know nothing of matters of faith. It must, therefore, be distinctly understood that we are formed into a society for the strict investigation of the science of Man, and that we must have the most perfect freedom of action and expression in all our discussions; not a mere

spurious professed liberty of thought, but something real. As scientific men, we must not be ashamed to own our ignorance, and say—

“All we know, is,
Nothing ‘yet is’ known”—

either respecting the origin of mankind or most of the important laws by which humanity is now governed.

There are many other points on which I ought to dwell, and amongst others, how we can best carry out our objects at the British Association. I trust I shall offend no member of the Royal Geographical Society when I say that it is utterly impossible for the science of Man to make any progress while it only takes a second and subordinate place in Section E. I believe I shall be supported by all who know the working of the British Association, when I say that the position Ethnology holds there is most painful to all those who are any way conscious of how that subject should be studied.

It will be for the Society to consider this matter, and the promoters of the British Association—always anxious to do all they can for the advancement of science—will, I am sure, be ready to adopt any plan which they think would be better for science than the present. Anthropology may be compared to the last volume of a work on Zoology, with perhaps an appendix. No doubt, therefore, the proper place for Anthropology is either in section D, or in a sub-section immediately connected with students of the other branches of animal life. Ethnology was formerly a sub-section of the zoological department, and what *scientific* consideration induced the government of the Association to remove it from its natural place, I have never been able to discover.

In drawing these hurried remarks to a conclusion, I would wish strongly to impress on my fellow-labourers that we have undertaken a most solemn and responsible duty. The time has gone by when the questions we are going to discuss could be evaded. Thanks to the spread of thought and liberty, the public demand that all subjects connected with Man shall be freely and openly discussed. They begin to realize the fact that there is nothing to fear from truth. The cry of “Danger” may be raised, but the public will no longer respond to it. They have heard it so often, that it produces no effect. Astronomy and geology have each been assailed as they have dared to expound the truths of nature. Some faint outcries have been heard at the discussions of the ethnologist, but their denunciations have never had a scientific value; and the time is yet to come when some mad attack may be made. It is said “that a burnt child dreads the fire,” but it remains to be proved whether some men will ever learn from experience. Whatever may happen, we must go on manfully with

our work, and neither turn to the right nor the left, to notice the odium which ignorance, fanaticism, or jealousy may cast at us. Public opinion has become so much altered that I do not anticipate such a result. On our part, we must be careful never to attack the religious conviction of any one. We have no right to attack or give any opinion on religious or theological subjects. Our duty is simply to seek for truth by patiently collecting data, and then carefully and humbly endeavour to decipher the meaning and import of those facts. I have heard it remarked that all recent discussions respecting Man have been mingled with levity; which should certainly not be introduced into any scientific discussion. We must be careful to avoid this. What we now want are earnest and real lovers of truth. Astronomy and Geology both have their wonders, but Anthropology has wonders equally great to reveal. We have had the enthusiastic astronomer and geologist, and are we never to have any earnestness in the study of mankind?

Let us, then, show that we too can be earnest in our study, as well as the geologists or the astronomers. But let it be known we are as yet only groping in the dark, and know not yet what to study, or hardly what facts we want to get, to found our science. We have not only to found a science of Anthropology, but we have to do what we can to form some anthropologists. We must not be daunted, but remember that our work has received the best wishes from many a scientific veteran, and deep regrets that they are unable to aid us. The work of this society must depend on young men who are ready to make it their study. Our success so far is all that can be desired. Thanks to a united council of workers and to our zealous and brave honorary secretary, we have within a few weeks founded a society, and commenced work in earnest. With such officers and such a council, I am content to be the humble steerer of our vessel, knowing that my course is already settled in our prospectus. This will be my sole guide and the path I am bound to follow. We have faith in the thinking public, and know that we shall be supported as long as we keep faith with them.

Let us remember, too, that science is not advanced by mere numbers. If we meet here as scientific brethren, and discuss the questions before us calmly and earnestly, as men ought always to discuss—whatever our numbers may be—we shall make more real progress in scientific discovery than by holding huge meetings where passion and ignorance drown both reason and common sense. Let us, too, not be daunted when we see our sister society, in Paris, surpassing us in papers and discussions. We must remember that they have a large band of trained men of science, whose sole duty is the investi-

gation of the problems which we attempt to solve; and that they possess some advantages which are not yet within our reach.

In conclusion, let me quote the words of a man whose death was such a great national loss. These sentiments, I think, are most appropriate to the present occasion, and coming as they do from the large hearted Edward Forbes, they must command the attention, if not obedience, of us all. He beautifully says,*

"The highest aim of man is the discovery of Truth; the search after Truth is his noblest occupation. It is more; it is his duty. Every step onwards we take in science and learning tells us how nearly all sciences are connected. There is a deep philosophy in that connection yet undeveloped; a philosophy of the utmost moment to man; let us seek it out. The world in which we live is a beautiful world, and the spirit of Omnipotence has given us many pleasures and blessings, shall we not enjoy them? Let us refresh ourselves with them thankfully, whilst we go forth in our search after Truth. We are all brethren, but it has pleased God variously to endow our minds. Some delight in one thing, some another. Some work for the good of the Body, and some for the good of the Soul. Let us all work together in fellowship for our mutual happiness and joy. Wherefore should men quarrel one with another because they hold different doctrines? Such as seek for Truth in the right spirit sympathise with each other, and, however opposite may be their present opinions, revile them not, but assist in their development; knowing, however wide apart may seem the paths they have chosen, one goal is aimed at; and if persevering, both must meet in the one wished for temple. Let those who feel the spirit to develop the Wisdom of Creation, and to act for the good of their fellow-men, strong within them, unite together in a bond of fellowship, each brother devoting his time and his energies to the department for which he feels and proves himself best fitted, communicating his knowledge to all, so that all may benefit thereby, casting away selfishness, and enforcing precepts of love. By such means glory shall accrue to his order, so that it may wax powerful in intellectual strength, and become a mental and a moral safeguard to the world, and a bond of union among all nations."

Thanking you for your kind attention, I will only add, may such sentiments always animate the Fellows of the Anthropological Society of London.

* *Life of Edward Forbes*. 1861. P. 195.

WILD MEN AND BEAST-CHILDREN.

By E. BURNET TYLOR, For. Sec. A.S.L.

THE native Australian and the Andaman Islander may be taken as fairly representing the lowest state of human society of which we have any certain knowledge. To a civilized European, such a life as that of these tribes seems, at first sight, but little removed from that of the lower animals; but a closer examination shows that, though their civilization is indeed very low in degree, it is the same in kind as that of more advanced races. These savages have articulate language; they know the use of fire; they have tools, though but simple and clumsy ones. There is no authentic account of any people having been discovered who did not possess language, tools, and fire.

But though at least this amount of civilization is always present among men living in communities, there are lower conditions under which it is possible for man to live, at any rate for a time. It is an object of some importance to anthropologists to know where the lowest limit of human existence lies; but, unfortunately, this limit is difficult, if not impossible, to find. Stories both old and new have been told of man living as a beast among beasts, or in a state of degradation not far removed from this; but they are few in number, and most of them are worth little or nothing as a proof of actual fact, though they are of great interest to the student of mythology. I have arranged and sifted, to the best of my ability, the stories of this kind which I have met with, beginning with some which are certainly true, and ending with others which are as certainly fabulous. Somewhere in the debatable land between the two, the line which separates fact from fable must lie.

After Napoleon's German wars, the countries ravaged by his armies fell into a state of misery and demoralization which we, whose lives have been spent in peace and prosperity, can hardly form an idea of. During this period, children without parents or friends, and left utterly destitute and uncared for, were quite common in Germany. Several such children were taken in at Count von der Recke's asylum at Overdyke; among whom were two especially, whose cases are noteworthy, as showing in what a state of degradation human beings might be found living in civilized Europe, not half a century ago.

One day a boy was sent to the asylum ragged and bleeding. He could not tell his name, so, as it was St. Clement's Day, they named him Clemens. When they asked him where he came from, he said "from the other side of the water"; but his answers to other questions were mostly unintelligible. When his mind had been somewhat developed, he told what little he knew of his own history. He had been set to keep swine, and shut up with them at night. The peasant, his master, gave him scarcely food enough to sustain life, and he used to suck the milch sow, and eat herbage with the pigs. When he first came to Overdyke they had to keep him out of the salad-beds, as though he had been a pig himself; for he would go on all fours in the garden, and seize and eat the vegetables with his projecting teeth. He never lost his affection for pigs; and they were so tame with him, that they would let him ride about on their backs. His pleasantest recollections and his favourite stories were about his life with them in his childhood.

This boy was not actually an idiot, as his history shows; but he was probably of imperfect powers of mind from his birth. He is described as having a very narrow head, and low forehead. His eyes were heavy, and he could not be made to run quickly or walk in an orderly way, though he was not deformed. He was always inclined to laugh, was of a joyous disposition, insinuating, and sensible to kindness. But, on the other hand, he was subject to uncontrollable fits of passion; and once, on being reproved for uttering frightful curses (a habit which he had learnt in former times), he tried to murder his benefactor with the woodcutter's axe he had in his hand, and laughed heartily as he was being taken away to be put in confinement.

Another boy, who was taken into the same asylum, had learnt to live almost wild in the forest, only approaching villages for the purpose of stealing food. He climbed trees with wonderful agility to get eggs and birds, which he devoured raw; a habit of which he was never cured. This boy's knowledge of birds and their habits was extraordinary; and the published account of him states that he had given "to every bird a distinctive, and often very appropriate name of his own, which they appeared to recognise as he whistled after them." This means, I suppose, that he named each bird by imitating its cry.*

The picture of Germany after the French invasion forms an apt

* Some account of these cases is given in *Dusselthal Abbey*. London: Nisbet, 1837. Details not mentioned there are from a MS. account sent to me by Count v. d. Recke.

parallel to the picture of Italy during the invasion of the Goths, in which the historian Procopius tells, as a startling instance of the horrors of the war, a story which belongs to the category before us, and is very likely true as matter of fact. An infant, left by its mother, was found by a she-goat which suckled and took care of it. When the survivors came back to their deserted homes they found the child living with its adopted mother, and called it *Ægisthus*. Procopius says that he was there, and saw the child himself.*

Within a few years there were wild men in the mountains of Tahiti, fugitives who had escaped from the general slaughter to which every man, woman, and child of a conquered tribe was doomed in Tahitian warfare. The missionaries saw two of these men who had been caught and brought down from the mountains at different times. One was quite naked, did not reply or seem to understand when spoken to, and showed horror at the sight of men. He refused the food and water which were offered to him, and escaped the second night after his capture. The other was of unsociable and wild aspect, but quiet. He seemed to take little interest in anything, and his general behaviour was that of a harmless lunatic.†

Few stories of wild men have made so much noise in the world as that of "Peter the Wild Boy," who was found wandering about the country near Hameln, in Germany, in 1724, and was supposed to be a specimen of man in a state of nature. His case was written and talked about for years; and writers on innate ideas, the origin of mankind, and similar subjects, reasoned upon it with more or less discretion. But when Blumenbach, the naturalist, came to examine the facts of the case, he proved to demonstration that Peter was nothing but a wretched mal-formed idiot boy, who could hardly have strayed from home many days before, for there was a fragment of shirt still hanging about his neck when he was taken. And just as Highlanders know a Cockney sportsman in a kilt by the first glance at his knees, so Peter's legs betrayed him. The colour of the skin above and below the knee showed that he had been wearing breeches, but no stockings, till a short time before he was taken. Peter's parents were eventually found, and his whole history traced.

For thousands of years there have been stories going about the world of children being carried off and brought up by wild beasts, and several new ones have come up in modern times. Blumenbach was not content with demolishing Peter the Wild Boy's claim to be a real

* *De Bello Gothico*, Lib. II, cap. xvii.

† Ellis, *Polynesian Researches*, vol. II, p. 504, &c.

wild man of the woods; he enumerated the other stories known to him of wild men, and children brought up by wild beasts, and after a severe criticism, tossed them all contemptuously aside; and since his time the whole subject seems to have fallen into discredit. Looking at the evidence which Blumenbach had before him, we cannot wonder at his coming to this conclusion.

Within the last few years, however, a statement has been published by Sir William Sleeman,* which makes it necessary to re-argue the question whether children have really ever been carried away and brought up by wild beasts or not. I shall first examine Sir W. Sleeman's statement, and then compare it with the older stories of beast-children.

It appears that wolves are very numerous among the ravines which run down to the banks of the Goomtee river, and they carry away many children even out of the towns and villages. The Hindoos dare not destroy them, from a superstitious fear that if a drop of wolf's blood falls within the confines of a village, that village is doomed to destruction. Only the lowest vagrant class have no such scruples; but though they know the wolves' dens and could exterminate them if they pleased, they scarcely ever kill one, and the reason of their forbearance appears to be this. In India, even very young children go about loaded with ornaments of gold and silver, and these vagrants are supposed to find it a more profitable trade to search for such ornaments at the entrance of the wolves' dens than to kill the wolves for head-money. This is all credible enough, but now comes the wonderful part of the story.

When Sir William Sleeman was at Sultanpoor, there was a boy there who was said to have been found running on all-fours in company with a she-wolf and three cubs. The whole family were seen coming down to the river to drink, and the boy was caught. He had at first to be tied to prevent his running into holes or dens. He tried to run away from grown people, but if children came near him he rushed at them and tried to bite them, snarling like a dog. Cooked meat he rejected with disgust, but a piece of raw meat he would put on the ground under his paws like a dog and eat it with pleasure, and he would allow a dog to share his food with him, but would not let a man come near him while he was eating.

The boy was sent to Captain Nicholetts, commanding 1st Regiment Oude Local Infantry. Here he became somewhat tamer, was inoffen-

* *Journey through the Kingdom of Oude.* London, 1855, vol. i, p. 206, &c.

sive unless teased, when he would growl. He would eat whatever was thrown to him, but preferred raw flesh, which he devoured greedily. Eating was the only thing he seemed to care for, and he appeared indifferent to cold, heat, and rain. He would not wear clothing even in the coldest weather. They made him a quilt, stuffed with cotton; but he tore it up, and ate it bit by bit with his bread. He liked bones, especially when uncooked, and would gnaw them as easily as meat. He ate half a lamb at a time, without apparent effort, would drink a pitcher of butter-milk without drawing breath, and would pick up earth and small stones and eat them. He ran to his food on all fours; but at other times he occasionally walked up-right. His features were coarse, his countenance repulsive, his habits filthy. He liked dogs, jackals, and other small quadrupeds, and would let them feed with him; and he had a pet, a paria dog, which he used to stroke and caress, and which ate out of his dish, till Captain Nicholetts, finding that the dog was depriving the boy of his food, shot it. The boy did not appear to care in the least about its death.

He did not become attached to any one, never played with children, and, indeed, shunned human beings, and would not remain near them, if he could help it.

During the three years this boy lived among men, till the last day of his life, he was never known to speak. When he wanted anything he used signs, and very few of them, except when he was hungry, and then he pointed to his mouth. But in his last illness, a few minutes before his death, he put his hand to his head, and *said it ached*, then he asked for some water, drank it, and died.

This boy was recognized by his parents; but they found him so stupid that they left him, to be supported by charity, and, unfortunately, they quitted the neighbourhood before any one thought of asking them his age when he was lost, and recording it. When he was caught he seemed to be nine or ten years old, and he lived three years afterwards.

In 1843, a boy three years old was carried off by a wolf at Chupra, while his parents were at work in the fields. Six years afterwards he was caught while going down to the river with three wolf cubs, and identified by a birth-mark and the scar of a scald. The wolf had been seen to carry him off by the loins, and the marks of teeth were still visible on them. The boy was alive at the time of Sir W. Sleeman's visit, and had been tamed to about the same degree as the

one last mentioned. His body smelt offensively. He would follow his mother about for what he could get; but appeared to feel no affection for her. He learnt to eat bread, and would eat what was given him during the day; but went off at night to the jungle. He used to mutter, but could not articulate any word. His knees and elbows were hardened with going on all-fours; he would tear off clothes if put upon him, preferred raw to cooked flesh, and would eat carrion when he could get it. The village boys used to catch frogs and throw them to him, and he ate them. When a bullock died, and the skin was taken off, he would go and eat it like a village dog.

As to the first-mentioned of these two boys, there is no doubt that Captain Nicholetts kept him, that Sir William Sleeman saw him, and that the description of his brutal condition in mind and body is to be depended on. I have a slight unpublished account, given by an Englishman who saw him, which agrees, so far as it goes, with the published statement. It describes him as an idiot of the *crétin* class, loathsome and disgusting to look at, unable to articulate, but making a noise like *bha-bha!* running at an extraordinary pace on his hands and feet when he liked. His ordinary gait was, however, erect. His speaking just before his death, if it really happened, may be accounted for as a reminiscence of his childhood, when some one may have taught him a few words, coming to him in the hour of death, a thing which often occurs. As to the second boy, I suppose that Sir W. Sleeman means to intimate that he saw him, as he was at Chupra at the time of his visit. The existence of the boys in an extraordinary state of brutalization may be taken as proved. But of their having been found living among wolves, we have no other evidence than that of natives, and it is pretty well known what Oriental evidence is worth as to such matters.

Sir W. Sleeman collected four more stories of wolf-children in the same district, and all the six are so curiously consistent with one another that it is possible to make a definition of the typical wolf-child, or rather wolf-boy, as we hear nothing of wolf-girls. He should be about ten years old, more or less, brutal and hideous in appearance, idiotic in mind, given to eating raw meat and garbage in preference to anything else, generally averse to wearing clothes, incapable, or almost incapable, of learning to speak, but able to understand and express himself by signs to some slight extent. I understand from Dr. Falconer, to whom I am indebted for information on

several points connected with the wolf-stories, that Mr. Pakenham Edgworth has met with a similar story in Central India.

If we examine the best of the earlier stories of beast-children, we shall find them very much like the modern stories from Oude. The wild child, of which we read in Wilhelm Dilich's Hessian Chronicle, as having been caught by hunters among wolves in 1341, is described as running sometimes on all-fours, and jumping an extraordinary distance. They could not tame it, and it avoided men, and would run and hide itself under benches. It could not bear the food given it, and soon died. A late version of the story is given by an anonymous monk, with some additional embellishments, as that the boy related that the beasts made a nest of leaves for him to lie in, and so forth; but there is nothing of this in the original.

The two celebrated stories given by the old historian, Bernard Connor, are not unlike the others, except that the children are brought up by she-bears instead of she-wolves. His account is as follows: "There was one (child) kept in a convent. He was about ten years of age (which might be guess'd only by his stature and aspect), of a hideous countenance, and had neither the use of reason nor speech: he went upon all four, and had nothing in him like a man, except his Human Structure. But, seeing he resembled a Rational Creature, he was admitted to the font, and christen'd; yet still he was restless and uneasy, and often inclined to flight. But at length, being taught to stand upright, by clapping up his body against a Wall, and holding him, after the manner that dogs are taught to beg; and, being by little and little accustom'd to eat at Table, he, after some time, became indifferently tame, and began to express his mind with a hoarse and inhuman Tone; but being asked concerning his course of life in the Woods, he could not give much better account of it than we can do of our Actions in the Cradle. Upon this occasion I was assured by the king himself, several Senators and other Great Men of that Kingdom; and, moreover, it is the common and undisputed Report, that children are oftentimes nourish'd and brought up by Bears in these parts. They say likewise that if a hungry He-Bear finds a child that has been carelessly left anywhere, he will immediately tear it to pieces; but, on the contrary, had it been a She-Bear, then giving suck, she would undoubtedly have carried it safe to her Den, and nourish'd it among her Cubs, which, after some time, might probably have been rescued from her, and been taken by Hunters, as it

* *History of Poland*. London, 1698, vol. i, p. 342, &c. *Evangelium Medici*. London, 1697, p. 181, &c.

happened in another Case of this nature in the year 1669 which has been positively asserted to me in a letter from his Excellency Monsieur de Cleverskerk, now Ambassador here to his Majesty King William, from the States of Holland, which letter I thought not amiss to insert."

The letter, dated January 1, 1698, relates that the writer was in Warsaw in 1661, and saw a boy at a convent there, who they told him had been caught some time before at a bear-hunt. The description he gives comes to this, that the boy was a half brutal idiot, who ran on all-fours to seize the bread which was given him.

Another account of this case, apparently an independent one, is quoted by Koenig,* from Hartknoch, *De Republica Polonica*. He says that in the year 1661 two boys were found in company with several bears in the woods of Grodno. One of them escaped with the bears into a marsh; but the other was taken. This boy appeared to be eight or nine years old, went on all-fours, and ate greedily such things as bears love, such as raw flesh, apples, and honey. He was taken to the king at Warsaw, and baptized Joseph. With some difficulty he was taught to walk upright. He could not learn to speak Polish, but expressed himself with a bear-like growl (*mur-mure ursino*). The king gave him to a vice-chamberlain of Posnan called Peter Adam Opalinski, in whose kitchen he was employed to carry wood, and do menial work. But he never lost his wildness, and would sometimes go off to the woods, where the bears never molested him: Koenig gives at full length a wearisome Latin poem, which was written about this Joseph in 1674.

There are two more stories, cited by Koenig, of a wolf-child caught in the forest of Ardennes, and of a wild man, going on all fours, caught in the forest of Compiègne.

As to the other stories of wild children, they are scarcely worth mentioning. The boy described by Tulp (*i.e.* tulip, a surname interesting as belonging to a Dutch burgomaster), who was brought to Amsterdam (probably as a show), and who had been caught in Ireland living among *wild sheep*, who ate grass and hay and bleated, was, as the very description shows, a poor dumb idiot, and about as much a wild boy as the wretched malformed Red Indian children that drew crowds of sightseers in London, not long ago, were "Aztec Children of the Sun." The girl caught living wild in Holland (of all places in the world), in 1717, who fed on grass and leaves, and had made herself a girdle of straw; the two boys seen to leap from crag to crag, like

* *Schediasma de hominum inter feras educatorum statu naturali solitario*. Hanover, 1730.

goats, in the Pyrenees, in 1719; Lord Monboddo's friend, the wild girl, who was caught at Châlons-sur-Marne, in 1731, diving for fish in the river; and the wild boy of Bamberg, who lowed like an ox, may be dismissed without further remark.

The whole evidence in the matter comes to this. First, that in different parts of the world children have been found in a state of brutalization, due to want of education or to congenital idiocy, or to both; and, secondly, that people often believe that these children have been caught living among wild beasts, a supposition which accounts for their beast-like nature.

Now stories of children being brought up by animals are found among the popular myths of several parts of the world. Of these, the tale of Romulus and Remus is the best known example. Here the idea of children being suckled by a she-wolf is joined to another incident often found in the old wonder-tales, the setting adrift of children in an ark, after the manner of the infant Moses in the ark of bulrushes. The infant Cyrus is said to have been brought up by a bitch,* and the attempt to rationalize the story by considering bitch (*Cyno*), to have been the nurse's name, as well as the similar explanation of the myth of Romulus and Remus, are evidently mere commentator's work.

A curious story in the *Kathâ-sarit-sâgara*, or *Ocean of the Rivers of Story*, a collection of Sanscrit wonder-tales dating from the twelfth century, belongs to the class of myths of beast-children. A certain Yaksha, or jin, whose name was Sata, saw the daughter of a holy man bathing in the Ganges; and both being inflamed with love at first sight, married one another by what is called a Gandharva-marriage, that is a sort of Scotch marriage, which was nothing but an agreement between the two parties without witnesses or any formality whatever. Such unions, which were only allowed to the warrior-caste, seem not to have been uncommon in India, to judge by the frequency of their occurrence in stories; but in this instance the lady's relations seem to have considered the proceeding immoral, much as we should have done. So they turned the young couple, by magic, into a lion and lioness, telling them to go and wander thenceforth, following only their own devices, as the lions do. The lioness died afterwards in giving birth, not to a cub but to a human child. and the father-lion made the other lionesses suckle the boy, who grew up and became the world-ruling king Satavahana.

In another Indian story,† the daughter of a Brahmin is delivered of a child while on a journey, and is obliged to leave it behind in a wood,

* Herod. i, c, 122.

+ Lassen. *Indische Alterthumskunde*, vol. ii, p. 809.

where a female jackal suckles it till it is rescued by some passing merchants.

Professor Albrecht Weber, of Berlin, whom I have to thank for the reference to the last two stories, tells me that he does not know of any stories of wolf-children in Sanskrit literature, which is, I believe, equivalent to saying that there are none in such Sanskrit works as are known to European scholars.

Dr. Prichard speaks of an Asiatic Saga which relates "the fate of a single family, born, or perhaps, if the story were rightly interpreted, suckled, by a wolf in Turkish Assena, or Tsena, who became the founder of the Turkish dynasty on Mount Altai." Whether the story in question really belongs to the same class with those just mentioned I am not at present prepared to say.

It should be remembered, also, that among the animals into which, according to a most ancient and wide-spread popular belief, a man can transform himself, the principal are the wolf and the bear. Men who have the power of changing themselves into wolves are called were-wolves (*i.e.* man-wolves), *λυκανθρωποι*, loup-garous, turnskins, turncoats; and the Norwegians believe that the Laplanders have the faculty of turning themselves into bears, so that the close connexion of these animals with man is a thing recognized in popular mythology.

The belief that bears have human souls occurs among the Indians of North America, and the custom of asking pardon of the bear before killing him is found there as well as in the old world. Mr. Gibbs tells a story he heard of an Indian tribe in California who begged the life of a wrinkled-faced old she grizzly-bear, into whom they firmly believed the soul of a deceased old woman of their tribe had migrated, she was so like her.* I have not met with any story of children suckled by wolves among the North American Indians; but there is a Chippewa tale which comes very near to it. A deserted child goes and lives with the wolves, who leave food for him. He gradually becomes more and more wolf-like; his brother at last finds him half turned into a wolf, and before he can catch him the transformation is complete.†

That among ignorant and superstitious men the step is easily made from an abstract belief in such stories to the application of them to particular persons, is a thing which hardly requires proof. Not many years ago, in districts where it was believed that witches could ride on spits and broomsticks, it was easy to obtain evidence enough against particular old women to satisfy the rest of the world that they had committed this diabolical act, and to cost the old women their

* Schoolcraft's *Indian Tribes*, Part III, p. 113.

+ *Id.* Part II, p. 232.

lives. The enormous influence which a belief in witchcraft has had, and still has, in the world, is due, in great measure, to its supplying an explanation of real events, such as storms, and the sickness and death of animals and men. In like manner there are facts which lend countenance to a belief in children brought up by wild-beasts, among a credulous and illogical people. The existence of idiots, no doubt, has been accounted for on this supposition, when the still more convenient belief in *changelings* has not taken possession of them.

It is easy to show how such stories may come to be believed as matter of fact, by an example which has this advantage over the stories of beast-children, that the matter of it is not only improbable, but ridiculously absurd. It would be, perhaps, imprudent to assert that it is *impossible* that children might be suckled by wild beasts, though the fact that the she-wolf drives her cubs away to shift for themselves before they are a year old is not very compatible with the notion of a child being an inmate of the family for several years; we can only say that it is very improbable and not to be believed but on the best of evidence; but if all the Asiatics living were to declare with one accord that a child and a crocodile had been born twins at one birth, we should not believe it. This idea of children and animals being born together is, however, common in the folk-lore of the East. There is a story in the Panchatantra of a Brahman woman bringing forth together a boy and an ichneumon.* Among the Land Dayaks there is a legend of a woman who brought forth at once a child and a cobra de capella. This is mere legend; but when Captain Cook and Sir Joseph Banks were in Batavia they found it believed as a matter of fact that children had often crocodile twins. Such crocodiles were at once carried down to the river by the nurse; and the family, especially the twin-child, used to throw food into the river for it from time to time. Not only were they assured by every Indian they asked that such things did happen, but many told them that they had frequently seen them. One girl declared that her father had charged her on his death-bed to carry food to his Sudara Oran, as these man-crocodiles are called. It used to come and eat out of her hand when she called it; it had a spotted body and a red nose, gold bracelets on its feet, and *gold earrings in its ears*. Another native assured Mr. Banks that he had seen a Sudara Oran. Mr. Banks replied that such stories were nonsense, as he had been told of one which had earrings, whereas everybody knew that crocodiles had no ears to put them in; to this the man replied that the Sudara Oran were not like other crocodiles,

* Book v, sec. ii.

they had five toes on each foot, large tongues which filled their mouths, and ears also, *although they were indeed very small*. Whether the great naturalist was right or wrong as to the abstract possibility of fastening earrings into a crocodile's ear-holes, I cannot exactly say, but the story is very remarkable as recalling the description of the tame crocodiles which Herodotus says were kept by the Egyptians who dwelt near Thebes and Lake Mœris, which had earrings of molten stone (*i.e.* probably glass), and gold in their ears, and bracelets on their forefeet.*

Such stories as Sir Joseph Banks's afford a fair criterion by which we can judge of the value of Oriental testimony about wolf-children. I cannot see that the whole evidence on the subject proves anything whatever, except the existence of the stories, and the fact that there have been and still are people who believe them. The whole matter may be safely given over to the student of Comparative Mythology, to whom it is a subject not without interest.

Even the well-authenticated cases of human beings found living in a state below that of the lowest savage tribes, are of little value to the Anthropologist. It is impossible to say in the case of any one of them how far their miserable condition was the result of want of civilization and how far of idiocy. Casper Hauser's case is of more value than all of them put together, as he, if the published accounts may be believed, seems at least to have been naturally of full powers of mind.

The original men, as the poet describes them, roaming, "a dumb and miserable herd," about the woods, do not exist on the earth. The inquirer who seeks to find out the beginnings of man's civilization must deduce general principles by reasoning downwards from the civilized European to the savage, and then descend to still lower possible levels of human existence, with such assistance as he can gain from the study of the undeveloped human mind in children, and in the blind and deaf and dumb, who have been prevented by physical defects from receiving much of the knowledge which is current among their fellows, and who are therefore often obliged to form their opinions from the direct evidence of their senses, without sharing in the treasury of knowledge which has been accumulating for so many ages, and comes almost unconsciously to ordinary children.

* Herod. II, c. 59.

ON THE INDIAN TRIBES OF THE GREAT DISTRICT OF LORETO, IN NORTHERN PERU.

BY PROFESSOR ANTONIO RAIMONDY OF LIMA.

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THE province of Loreto is as large as all the other departments of Peru together. It is bounded on the north by Ecuador, on the east by Brazil, on the south by the departments of Cuzco, Ayacucho, and Junin, and on the west by the departments of Libertad and Amazonas.

In the south and west the country is broken by mountains. In the north and south it is covered by a luxurious vegetation, and has a wonderful net-work of rivers which run into the mighty Amazon.

The climate is generally hot and humid, but the high temperature is not very inconvenient, in consequence of the air being continually refreshed by frequent rains, and by the evaporation of the water which covers so much of the land.

However, during mid-day time on the wide sandy shores of the Amazon and Ucayali, the sand is too hot to walk upon.

The native inhabitants of Loreto differ entirely from those of the other portions of Peru. During the Incarial times they were unconquered tribes of savages, and even at this day many preserve their independence.

Thus we have in this portion of Peru reclaimed and wild Indians natural to the soil; other Indians who have come into the country from the north and from the east since the Spanish conquest; and others, the result of the mixture of the reclaimed, wild, and intruding tribes.

The wild Indians, or, as they are called by the Spaniards, infidels, belong to many tribes, speaking generally a separate language. The reduced Indians also belong to various tribes, and speak distinct

* This account is from a Memoir presented to the Peruvian Government by Professor Raimondy, entitled *Apuntes sobre la Provincia litoral de Loreto*, and printed in Lima, 1862.

languages; but a great portion of the latter speak Quichua, or the Inca language, and understand Spanish.

The inhabitants of Moyobamba ($5^{\circ} 30' 29''$ S.), are, some whites, and mixed with Indians. Those of Tarapoto are divided into whites and mixed, and Indian; to the latter may be added the Lama tribes; these Indians of Tarapoto hunt with the *cerbatana* (blow-pipe), in which they use the poisoned arrows, anointed with the poison of the Lamas, from whom they procure it.

The Indians inhabiting the banks of the river Huallaga, in the districts of Tingo Maria and Pachiza, belong to two nations reduced in 1676, known under the names of Cholones and Hibitos, having their own languages.

A great portion of these people are only Christians in as far as they have been baptised. They are idle, and pass the greater portion of their time in drunkenness, produced by their *masato* (a liquor made from the yuca). They paint their faces and bodies with the fruit of the huito or jagua (*genipa oblongifolia*), and with the *achote* (*bixia Orellana*), and scarcely cultivate the most necessary plants for their maintenance. They now wear a shirt and short trowsers, of a cotton cloth, dyed blue with a species of wild indigo.

The Indians of the Jévaro country* (partially reduced in 1517,) have their own language; some of them also speak Quichua; they are employed as servants in Moyobamba, and have learnt Spanish. They are robust, docile, and hard-working field hands.

These Jévaros carry loads of a hundredweight with ease over the worst of mountain tracks. They dress with the short cotton shirt and trowsers; the women use a covering for the lower portion of the body called the *pampanilla*, protecting sometimes the upper portion with a mantle, and in which they generally carry their children before them.

The reduced Indians of Yurimaguas belong to various tribes, the principal one being the Cocamillas, who now inhabit the village of Laguna. They are tractable, and clever in river navigation, principally on the Huallaga, which is a very difficult one. They dress in the short shirt and trowsers, and use the blow-pipe when hunting, in which they are most dextrous.

The Indians of Nauta are baptised, and are composed of three distinct nations, namely, Llameos, Cocamas, and Omaguas, each speaking a different idiom. They are land-carriers and boat-men.

* I have already given an account of the Jévaros of Ecuador in Trans. Ethno. Soc., 1862, in connexion with the "Idol Human Heads" of this nation.—W. B.

Independently of the *cerbetana* they use the *sisga*, or harpoon (?), to take the *pachi* (*Vastres gigas*) and the sea-cow (*Manatus Americanus*).

The inhabitants of Iquitos, Pebas, and Loreto, are a mixture of baptized and wild Indians, belonging to tribes, as the Iquitos, Pebas, Yaguas, Orejones, Ticunas, and Mayorunas. The baptized ones cover the lower portion of the body, but the wild ones go nearly naked. They ornament the face with red and black stripes, and use lances and poisoned arrows.

The Yaguas are not ill-looking, cover the lower part with the bark of the *llauchama*; their hair is cut short, and at times adorned with feathers; some put feathers on the arms and neck.

The Orejones go naked, wearing the hair long, and have the custom of inserting round pieces of wood in the thick of the ear, the lobe at times reaching to the shoulder; this has given them the name of *Orejones*, or big-eared. Some of them pass a piece of wood through the cartilage of the nose, and paint the face with *achote*. These Indians prepare the poison for the use of many others in this portion of Peru.

The Ticunas go naked, their hair is long at the sides and cut short in front; they wear a collar of the teeth of the jaguar or the monkey. They also prepare poison.

The Mayorunas pass a piece of wood through the lips. Some are pretty docile and industrious, but others, who wander about the forests, are always at war with the wild Indians of the Ucayali. Those tribes which frequent the Ucayali, to salt the fish they catch, do not sleep on the right bank for fear of the Mayorunas.

In that portion of the Marañon between the Pongo de Manseriche* and the mouth of the Pastasa, the wild Jévaros are found, divided into Muratos, Huambisas, Aguarumas, and Antipas; they generally go naked, are of good figure and active, very warlike, and use the lance with dexterity. This portion of the Jévaros are continually at war with each other, but mostly the Aguarumas with the Antipas, who live above the Pongo de Manseriche.

The Aguarumas dwell between the mouth of the Nieva and the Pongo de Manseriche. This tribe was discovered in 1859, by the expedition headed by the Bishop of Chachapoyas. At present they

* This term is given, in Peru, to all straits in a river, formed by high mountains on either side, and when the sides are perpendicular. It comes from *Puncu*, a Quichuan word, meaning door. The Pongo de Manseriche is six miles in length. It only took Condamine fifty-seven minutes to pass through the Pongo; its narrowest part was fifty-eight yards.

are nearly all reduced, and go frequently to the city of Chachapoyas ($6^{\circ} 7' 41''$ S. $78^{\circ} 55'$ W.)

The Jévaros have a language of their own, which is sufficiently expressive, and not disagreeable to the ear. Some of the Jévaros, especially a few of the chiefs of the Aguarumas, understand a little Quichua, by which it would appear that a portion of them had been subjugated by the Incas.

The shores of the Ucayali and its affluents are inhabited by many other wild tribes; some, however, have been reduced and live in the village of Sarayaco.

The principal wild tribes of the Ucayali and its affluents are the Piros, Campas, Amahuacas, Remos, Conibos, Setebos, Sipibos, and Cashibos. All these, excepting the last, who inhabit the river Pachitea, cover themselves with a loose garment called the *cusma*, which is made of cotton cloth, woven by themselves, varying in width and colour according to the tribe.

The Piros are those known in the forests of Cuzco under the names of Chontaquiros and at some points of the Ucayali as Simirinches. Of all the tribes dwelling on the Ucayali the Piros are the most intelligent, brave, and good-looking. They barter wax, collected in their woods, for tools, cotton cloth, fish-hooks, glass beads, &c. Their principal village is called Santa Rosa de los Piros, and situated at the confluence of the Rivers Tambo and Santa Ana or Urubamba.

The name of Chontaquiros given to the Piros of the forests of Cuzco is in consequence of the custom they have of dyeing their teeth with a root, which gives them a black colour,—the *chonta*, black wood, and *quiros*, tooth. The Setebos, Sipibos, and Conibus blacken their teeth with *chonta* also.

The Piros speaks a different language to the other wild tribes of the Ucayali, and they are at once known by their using a blackish *cusma*.

The Campas are known also by the name of Antis; they occupy a large district, that between the river Santa Ana, of the forests of Cuzco, and the river Chanchamayo of the forests of Tarma.

The Campas form a numerous nation, strong, and warlike. They are distinguished from the Piros by having a different language, by not dyeing their teeth black, wearing a larger *cusma*, and of a yellowish colour.

Their language is different from that of the Piros; its abundance of vowels makes it pleasant to the ear. But what is curious is, that although there is scarcely one word which is common to the two lan-

guages, nevertheless they have a similar peculiarity in that the names of all parts of the body begin with the same letter: thus in the language of the Piros the W is used, in that of the Campas the N.

The Campas inhabiting the forests of Chanchamayo are most warlike, and will not enter into friendly relations with the white man. It has to be observed that portions of these tribes, which dwell in the valley of Santa Ana, in the department of Cuzco, where they have been well treated, are reasonable enough. The use of the cannon and musket is not the way to make them friendly.

The wild Amahuacas live on the banks of the affluents of the Ucayali; they are docile and intelligent; in consequence, of not having a warlike disposition, they are invaded by the Piros, Conibos, Setebos, and other nations, who surprise the Amahuacas, generally killing the men, selling the children as slaves, and keeping the women. At the mission of Sarayaco I have seen some young Amahuaca boys, who had learnt in a short time to read and write correctly.

The Amahuacas extend far into the interior from the right bank of the Ucayali, and some of them give us the information of a nation of Negros, with whom they are at peace. It would appear that these are most likely fugitive slaves from Brazil.

The Remos are wild, and inhabit the extensive country to the right of the Ucayali, between the mountains of Canchahuaya and the river Tamaya; the greatest number inhabit the valley of Callaria.

The Remos, as well as the Amahuacas, being rather peaceful, have inroads made upon them by the Conibos, on which account Father Calvo founded about 1859 the village of Callaria, so as to prevent the incursions of the Conibos.

The Remos are distinguished from all the others, instead of painting the face with *achote*, or with *huilo*, they tatoo themselves by picking the skin with a spine, and then introducing the smoke from copal resin.

The Setebos, Sipibos, and Conibos are not easily distinguished, because they dress almost alike, and speak the same language, which is the Pana. They wander about the Ucayali, from the river Pachitea to the Marañon. The Campas and some of the Piros perforate the *tabique*, or tip of the nose, suspending from it a small silver plate, which covers a portion of the upper lip.

The Conibos still preserve the custom of flattening the heads of their children between two boards; one is applied in front, the other behind; so that the forehead is made to fall back, and the head is lengthened behind, which looks very much like the crania found in

some of the ancient tombs of Peru. In the mission of Sarayaco I saw a young male child, who had been brought to be baptized, and, independently of flattening the head, so that it should be elongated behind, it had a round knob on the frontal bone. I was informed that the board which had been placed in front had a hole in it, and through this hole the frontal bone of the head had been pressed.

The wild Setebos, Sipibos, and Conibos have, principally in adults, a rough cutis, almost squamose, owing to the constant biting of mosquitos, as well as from a species of itch very general amongst them.

We have said that these wild tribes invade the Remos and Amahuacus, to steal their children and women; the cause is that all the savages of the Ucayali are polygamists, and not having a sufficient number of women of their own nations, steal those of others.

The Caschibos are the most savage of the tribes who dwell on the Ucayali and its affluents. They are to be found mainly on the shores of the rivers Pachitea and Aguaitia, and go naked. They have been considered cannibals; still I have my doubts of this, and if it is true that they eat their old men, this custom is rather connected with a religious superstition than an act of cruelty. It is said that when it is announced to an old man that he is to be a victim, he is filled with joy; for he believes that he will soon join his departed relations. However this custom of eating the old people is common to many other of the wild nations of Peru; for Osculati, the Italian traveller, when among the Mayorunas, in his descent of the Napo to the Amazonas, says, that a Mayoruna, who had been baptized, when at the point of death, was very miserable and unhappy; and on being asked why he was so, replied that he was wretched indeed, because, dying as a Christian, instead of furnishing a meal to his relations, he would be eaten up by worms.

In my opinion the wild Caschibos might be reduced as well as others; and a convincing proof is that Father Calvo, having made several journeys to the river Pachitea, entered into relations with many of them, and has now more than a hundred friendly to his Christian views. If he has been successful, it is that he has not employed the force of arms, but peaceful and humane manners, presenting them with knives, fish-hooks, glass beads, &c.

I believe that all the wild Indians may be reduced. Our object should be to inspire them with confidence, to give them knives and hatchets, and teach them the importance of these instruments in the construction of their arms, canoes, &c., in a word, create

necessities, such as they cannot satisfy of themselves. Such men only know the physical and material which speaks to their eyes most convincingly, — the presents of a fish-hook, a knife, or a hatchet, have more power than the most eloquent discourse. Here is a proof. I saw a Conibo at Sarayaco, who, having received some fish-hooks for having brought his child to be baptized, on the following day brought it a second time, so that he might receive a similar present.

There can be no doubt that the best method to reduce the wild man is to give him fish-hooks, whet-stones, needles, hatchets, and knives; and when he has worn out any of these, and cannot of himself replace, he will come and put himself in relation with the white man; then let there be some good and patient missionaries ready to receive them as friends, who will beg of them to live in villages, and change their wild customs; they will awaken in the red man the love of labour, his intelligence will be exercised, and his ideas will be elevated towards better things.

The infidel Caschibos appear to be related to the Setebos, Sipibos, and Conibos; for they all understand the Pana, and it is probable that what they speak is a dialect of the same language.

The Pana language is the most general on the Ucayali and its affluents, and spoken with but little differences by all the wild Indians, excepting the Piros and the Campas. The Pana is most distinct from the Quichua. Considered relatively, and in regard to the necessities of the Indians who speak it, it is sufficiently rich; but it has many words which can not be translated into another language excepting by making a phrase of it.

The pronunciation is somewhat difficult, because there are many very aspirate and guttural words; also many that, to pronounce them, the tongue has to be applied to the root of the teeth.

The particle *ma* interposed to a verb means that another has to do what is indicated by the verb; for example, the word *pique* means to eat, the word *pimaqui* indicates the making another eat.

All the natives of Loreto have an incomplete system of numeration, and only up to 3, 4, and 5, indicating by the fingers when they exceed 4 or 5, and in expressing by the word *many* when they cannot express by the fingers.

The Jévaros count up to five in their own language; but have completed their numeration by taking the Quichua numbers, which are complete. Thus the Jévaros count up to five in this manner: *alza*, one; *catuta*, two; *kala*, three; *ingatu*, four; *aleyticlon*, five; and

then continue with the Quichua up to ten. Above ten, and in which enter their own five, they mix the Jévaro and Quichua numeration.

With regard to the population of the wild Indians, their number has been exaggerated; some have put it down as high as 200,000. My opinion is that they do not amount to more than 30,000 to 40,000. However, I believe that in former times the number was much greater, but diminished by the visitation of various epidemics.

Father Pallarez, in 1854, made a careful visit into all the valley right and left of the Ucayali, from Sarayuco to the river Tambo, taking with him an organ to amuse, which caused them to leave their fastnesses to hear it. He gives the number of Indians at 1830, composed of 709 men, 699 women, and 422 children under fourteen years of age. With that number we may calculate, including those who did not come to him, a total of 2,000 individuals, who inhabit this great extent of country. Adding another 2,000 for the Campas, and the few who live above the river Tambo and below Sarayaco, we shall have a population of 4,000 inhabiting the whole extent of the Ucayali and its affluents.

Giving rather an exaggerated number of inhabitants on the shores of the rivers Tovari, Napo, and Pastasa, and their affluents, and a 1000 to 2000 for each of the other rivers, which run into the Amazons in the Peruvian territory, we do not quite come up to 30,000 or 40,000. Including now the whites and mixed breeds of the districts I have gone over, there may be 45,000. To this number 4000 to 5000 may be added, consisting of a scattered population. Thus we have about 50,000 reduced Indians in the province, and the 30,000 or 40,000 wild ones, will give a population of 80,000 to 90,000 for this very large district of Loreto.

The country of Loreto, independently of its valuable tropical vegetable productions, contains within its mountains much common salt, sulphate of lime, alum, sulphur, iron ore, lignite, and gold; this last is found principally in the river Napo, and in various parts of the Marañon, particularly near the Pongo de Manseriche. The main gold-washings are the Chaupirumi, Pucayaco, San Ignacio, Paragua, Calentura, Achiral, Limon, Nitagua, &c. There are accounts that this precious metal exists in abundance in the mountains of Angaisa, where the waters of the Mayo rise, passing Mayobamba (5° 30' S.), and other rivers that flow into the Marañon.

The plantain is the bread of the inhabitants of this region. From the ripe fruits an alcoholic drink is made; from the green a sort of

paste or mortar is made to stop up interstices in the rude earthen still, from which they distil a spirit from the juice of the sugar-cane. Indeed the plantain affords food to fowls, pigs, and horses.

The Yuca (*Manihot aipi*) is the other vegetable most indispensable to the Indians. 1. It forms their bread when roasted in the ashes. 2. From it they prepare their favourite and indispensable drink the *Masato*. To give an idea of the mode of preparing this drink, one must enter the large habitations of the wild inhabitants of the Ucayali, before one of their feasts. On one side are seated many half-naked women around a heap of *Yucas*, peeling them; in another place a woman is employed in putting the cleaned *Yucas* into an earthen vessel, large enough to hold a man. A little water is then introduced; the *Yucas* are covered with leaves, and the whole boiled. After the boiling the Yuca is beaten into a paste, generally in the hollow of a tree, which is their principal article of furniture. The women, and sometimes the men, now sit round the heap of Yuca paste, each taking a mouthful, and masticating it, and then spitting it out on the heap.* This operation is repeated as many times as is necessary to turn the Yuca into *Masato*. The whole is now mixed with the hands, and then it is put into earthen vessels to ferment for from two to four days. This fermented Yuca paste is known under the name of *Masato*, and is taken with them on their journeys to serve as food and drink. When they wish to have a drink they take a handful of *Masato*, rubbing it with their hands into the quantity of water they think necessary. 3. Arrow-root or Chuño is also prepared from this plant, and goes by the Brazilian name of *Farina*. This operation is performed by slicing the Yuca, putting it into a roomy wicker vessel, which can be extended longitudinally, acting as a press. By this operation all the liquid portion is pressed out; the solid portion is removed and toasted in earthen vessels, and is then ready for use and sale.

In many portions of Loreto a crop of Yuca is produced in six months, so that at times they plant it on the shores of the rivers, the moment the waters begin to subside, and reap their crop ere the waters of rain rise again, and this without working the land.

Rice and maize give abundant crops in five months; the sugar-cane in six or seven months; the cocoa yields six crops annually; tobacco grows luxuriantly; cotton (*G. aboreum* and *G. Peruvianum*), grows spontaneously, from which they weave *tucuyo*, cloth for use and sale.

* A similar operation is performed by other Indians in Peru, on the Maize, for making their favourite drink of *Chicha*.

Coffee and cocoa grow luxuriantly and spontaneously; the *bombonaje* (*Carludovica Palmato*), from which the so called Panamá hats are made, is not cultivated, but grows wild. The *Pischuago* (*Guilielma speciosa*), an elegant palm, yields its fruit for food. The *Aguaje* is another palm (*Mauritia flexuosa*), which yields food; also by incision a liquid flow from which alcohol is made, and it produces a sago. The Tutumo (*Crescentia cujete*), from the shells of the fruit their domestic vessels are made.

This same region produces many other indigenous and foreign fruits, as the orange, lemon, palto (*Persea quatisima*), pacays (*Inga vera*, etc.), lucumos (*L. obovata*), marañon or anarcadium (*A. occidentales*), papaw (*C. papaya*), plums (*Bunchosia*), cherries (*Malpighia selosa*), the bread fruit (*Artocarpus*), etc.

There are cultivated pine-apples (*Bromelia ananas*), weighing eighteen pounds, ajii, (*Capsicum*), kidney beans (*Phaseolus*), and the achote (*Bizia Orellana*), which is used to colour some of the dishes of food; to say nothing of the spontaneous vegetation of *Heliconius*, *Alpinus*, *Marantas*, *Justicius*, *Costus*,—plants that may be reared in European gardens. Of medicinal plants: the Ipecacuana; the Eschotria, affording yellow dyes; the useful Yarina (*Phytelephas macrocarpa*) or vegetable ivory; the barbasco (*Jaquinia armillaris*), the root of this is used for intoxicating the fish in the rivers, and thus taking them with greater facility; simalax of various sorts; the huaco (*Mikania*), used against the bites of serpents: the sanango (*Tabermontana*, *S.*), used in rheumatism, so common in these humid regions; vanilla; cocculus; strychnias (from the last the Ticunas of the Amazons prepare the poison).

The odorous pucheri (*Neitandria P.*), the fruit of which is used in dysentery; the quina-quina, yielding the balsam of Peru; copiba; chinchonas; matico (*Arante elongata*), to cure wounds; the wax palm; mahogany; cedar; balsa wood (*Ochroma piscatoria*), and very many others. The llanchma tree yields a stuff used for bedding; the tacuari gives a thin bark, used in lieu of paper for cigars; the huimba (a *Bombax*); the vitu or Jagua (*Ginipa oblongifolia*); the fruit yields a blue colour, used as a paint, and for protecting their bodies from the mosquitos; the setica (*Cecropia pellata*), in the hollow trunk of which lives a bee that produces wax and honey, the caucho jebe, or India-rubber plant (*Siphonia elastica*), &c., &c.; Then the great family of Palms, and beautiful flowering plants without number.

The Ticunas of Loreto are the principal preparers of the "Ticuna

poison," which they extract from *nine* different species of plants (probably of the *Strichnos* family); a bird or animal struck with a poisoned arrow dies in two or three minutes. They likewise "disecan" (stuff) birds and some animals with a "natural" preparation; but this sort of preserving does not last. They make brei, pitch, or tar, hammocks and rope from the Chambira palm, and flour from the Yuca. They use the bow and arrow and blow pipe. They go nearly naked, and are pacific.

A DAY AMONGST THE FANS.

By R. F. BURTON,

VICE-PRESIDENT OF THE ANTHROPOLOGICAL SOCIETY OF LONDON.

H.M. CONSUL AT FERNANDO PO.

"It was my hint to speak: such was my process;
And of the cannibals that each other eat,
The anthropophagi, and men whose heads
Do grow beneath their shoulders."—OTHELLO.

SIR,—I make no apology in forwarding to our young society a few notes touching a people who, during the last two seasons, have excited so much curiosity amongst Anthropologists—the Fans, or so-called *cannibal* tribes of the Gaboon country. After a fruitless search for Mr. Gorilla, I returned to the "Baraka Factory," Mr. Bruce Walker's hospitable house on the Gaboon river. When due preparations had been made, I set out at noon, on the 10th April, 1862, in the *Eliza*, a schooner belonging to the establishment. The navigation of the "water of Mpongwe" or Gaboon river, which forks at the island of Ynenge-Nenge ("isle, island"), was not a treat. The Nkomo, flowing from the N.N.E., and the Mbokwe, or lesser branch—my line of travel—from the N.E., are equally monotonous, muddy, and mangrove-grown, to say nothing of the mosquitos. After passing several Bákele and Fan villages, whose noisy inmates turned out to cheer and chaff, and after experiencing violent tornados, which this year have been more than usually frequent in the Gaboon

country, we anchored at 8:50 p.m., on the 12th April, off Máyyán.* I presently landed, under charge of Mr. Tippet, a most intelligent coloured man from the United States, who acts as native trader to Mr. Walker for ebony and ivory, near the head of the Mbokwe. On the 15th April I walked to the sources of the Gaboon river, which rises in a well-wooded sub-chain of the Sierra del Crystal; and on the 17th April I found myself once more in the "Baraka Factory."

My account, therefore, will contain little beyond "first impressions." First impressions, however, are not to be despised. Veterans are prone to deride Mr. Verdant Green, who, after a week, where *they* have spent years, ventures to record his experiences. They are wrong. Books like *Eöthen*, or the *Crescent and the Cross*, were written by men upon the wing. No "old resident" could produce such life-like, vivid pictures. The longer we remain in a place, I need hardly say, the the more our sensations are blunted, and their expression necessarily becomes like a MS. from which, by careful correction, everything salient or interesting is eliminated.

I now return to my day amongst the Fans. Arriving at Máyyán all the guns on board the schooner were double-loaded and discharged, at the instance of Mr. Tippet, who very properly insisted upon this act of African *politesse*. We were answered by the town muskets, which must have contained the charges of old four-pounders. It was dark when passing through the sable masses that awaited upon the gloomy river bank their new merchant, *i. e.*, white man; we proceeded to Mr. Tippet's extensive establishment, where I was duly immured like a queen bee. Accustomed to the frantic noisiness of an African village, my ears, however, here recognized an excess of out-bawl, and subsequent experience did not efface this "first impression." But noisiness, like curiosity, is a good sign in the barbarian. The lowest tribes are too apathetic to shout about, or to look at anything however strange to them. At 5 a.m. of the next day, after a night with the gnats and rats, I arose and cast my first nearer look upon a Fan village. Like those of the Mpongwe—whom the French call "*les Gabons*," and who are the remnant of our ancient "Pongos"—it is a single street, about half a mile long, formed by two parallel rows of verandahed huts, looking upon a line of yellow clay road, which is broken by three larger huts, pawaver or club houses, where the men assemble. The people were far more interesting. Expecting a large-limbed, black-skinned, and ferocious looking race, I was

* It is proposed thus to write the very nasal nasals of the Fan language.

astonished to see a finely-made, light-coloured people, of decidedly mild aspect. The features, also, were sub-African, many, if whitened, might pass for Europeans; few were so negroed in type as the Mpongwe, none so negro as the blacks of Guinea or Kongo. Their aspect, however, is that of a people freshly emerged from the "bush." Many of them point their teeth. The grotesqueness of their *perruquerie* can only be rivalled by the variety of dress and ornament. No two are alike. The hair is not crisply-woolly, like that of the Coast tribes. In some women it falls below the neck nape, and the texture is of a superior order. The males wear it in plaits, knobs, and horns, with stiff twists and projections rising suddenly some two inches from the circumjacent scalp. One gentleman had a pigtail hanging to his shoulders, and there confined by the neck of a Bordeaux bottle instead of a ribbon. Some heads are adorned with tufts, bunches, and circles of plumes, or single feathers, especially of the touraco (*Corythix*), an African jay, whose red spoils are a sign of war. Skull-caps of palm leaf plaited and blackened are common in the interior, but are here rare; an imitation, however, is made by plaiting the hair longitudinally from occiput to sinciput, reducing the head to a system of ridgelets, and the poll is surmounted by a fan-shaped tuft of scarlet-dyed palm leaf. I noticed a (to me) new fashion of crinal decoration. Two or more threads of hair, proceeding usually from the temples, sometimes from the sides, or from the back of the skull, are lengthened with three fibres, and finished with red and white beads, each in single line, so long that they fall upon the breast or back. The same is done to the beard, which sprouts in tufts from both sides of the chin; it is not thick, and moustachios are as usual wanting. Allow me to end this part of the subject by assuring you, that whatever absurdity in hair may be demanded by Europe, I can supply you to any extent from Africa. Gentlemen who part their locks like Scotch terriers all down the back should be grateful to me for this truly sporting offer.

The complexion of the Fans is, as a rule, *café-au-lait*, the distinctive colour of the African mountaineer or man from the interior. Some few are very dark; these, however, are of servile origin. There is not much tattooing, the shoulder alone excepted, amongst the men. The "*Gandins*," however, disfigure themselves with powdered cane wood, mixed with butter-nut, grease, or palm oil—here a luxury. The latter is a custom probably derived from the coast tribes. Nothing simpler than the toilette. Thongs of goat, wild-cat, or leopard skin girth the waist, and cloth, which rarely appears, is supplied by the

spoils of the black monkey (*C. Satanas*), or some other "beef." The national costume, however, is a swallow-tail of fan palm, greasy and ochred, thrust through the waist-belt, and when stiff and new, standing bolt upright; when old, it depends limply, resembling the Irish peasant's. A similar fan-like formation, the outspread portion worn like the other, the wrong way, decorates the fore-part. The ornaments are green seed beads, Loango or red porcelains, white "pound-beads"—the latter so called because one pound is equal to one dollar—copper wristlets and anklets, and fibre bandages under the different articulations.

All carry arms, generally spears of fantastic and cruel shape, dwarf battle-axes, and curious lotus-shaped knives. The latter have blades broader than they are long, as is the fashion of the Mpongwe; the sheaths, of fibre or leather, are elaborately decorated, and the "*chique*" is for the scabbard to be so tight that the weapon cannot be drawn for five minutes. There are some trade muskets. Bows and arrows are unknown; yet in war the Fans carry large square shields of elephant hides. The *mbái* or cross-bow peculiar to this people, who seem to have invented, not to have borrowed it, as might be supposed, from Europe, is only carried when sporting or fighting. I need not describe this instrument, whose form is now familiar to England: suffice it to remark, that the *détente* is simple and ingenious, that the *ebe* or dwarf bolt (a splint of wood) is always poisoned, and that I never saw a good shot made with the weapon. Most men, also, carry a pliable basketful of splints, which, sharpened, poisoned, and placed upon the path of a barefooted enemy, must somewhat discourage pursuit. Though poor at managing canoes—an art to be learned only in infancy—many villagers affect to walk about with a paddle, like the semi-aquatic Krumen.

In the cool of the morning Fitevanga, king of Máyyáⁿ, lectured me upon the short and simple annals of the Fans. They are but lately known to fame, having, within the memory of man, crossed the Sierra del Crystal, or West African Ghauts, and dislodged the less warlike Bakele and Mpongwe. In 1842 few were seen upon the head waters of the Gaboon, now they are known to visit the factories at the mouth of the river. They were accompanied in their westward migration by a kindred tribe, the Osheba, and both were, doubtless, driven seawards by the pressure of the inner tribes. These are successively, beginning from the west or seaward, the Bátis, the Okáná, the Yefá, and the Sensoba, the latter being the easternmost known to my negro informants. You will vainly look for these names in

the best of our modern charts. All the lands lying eastward of the Gaboon river-head are purely white. All these races are described as brave, warlike, and hospitable to strangers. I would here draw your attention to a fundamental error in African ethnology, made by Dr. Livingstone, who, deriving all his knowledge from the southern corner of the vast continent, asserts that "*no African tribe ever became extinct.*" The contrary is emphatically the case; nowhere does the selection of species, so to speak, fight more fiercely the battle of life, than in maritime Africa. The tenants of the coast are rarely ancient peoples. Demoralized by the contact of European and Asiatic civilization, and having, like the Turks, less inducement to bar the coast to their inner neighbours, than the latter have to secure free transit for their merchandise to the ocean, the world's highway of commerce, they degenerate and gradually die out. I will instance in the present day the Mpongwe and the Efik, or old Calabar races. During the last half century both notably have declined, and they are in a fair way to become extinct, or to be merged into other tribes, before the year of grace 1900.

The name of this Fan nation deserves correction. The Mpongwe of the Gaboon river know them as Mpángwe, the Europeans as Pauouin, or Paouen—corruptions both. They call themselves Pánwe, Fánwe, and Fâ^a, with a highly nasalized *x*. The plural is Bá-Fâ^a.* The word Fan pronounced after the English fashion would be unintelligible to them. Their tongue, which belongs to the northern or equatorial branch of the great south African family of language, is soft and sweet, a contrast to their harsh voices and *criard* utterance. They are intelligent as regards speech. During my short stay I collected, assisted by Mr. Tippet, a short vocabulary from the chief's son and others. It was subsequently corrected by a comparison with an unpublished MS., the work of the Rev. Mr. Preston, of the A. B. C. F. Mission, an able linguist, who has resided for some time, and seen some queer adventures among the Fans. If you desire it, it is freely offered to you.

After a bath in the muddy Mbokwe I returned to the village, and found it in a state of ferment; the sister of a young warrior had lately been killed and "chopped" by the king of a neighbouring Osheba hamlet, "Sán-Kwí," and the brother was urging his friends to up and arm. All the youths seized their weapons, the huge war-drum, the hollowed base of a tree, was set up in the middle of the street;

* Fân in their tongue means a man.

preparations for the week's singing and dancing, which inaugurate a campaign, were already in hand, and one man gave earnest of bloodshed by spearing a goat, the property of Mr. Tippet. It being my interest that the peace should be kept till our return from the sources of the Gaboon river, I repaired to the palava house, and lent weight to the advice of my host, who urged these heroes to collect ivory, ebony, and rubber, and not to fight till his stores were full. He concluded by carrying off the goat. After great excitement the warriors subsided into a calm, which, however, was broken two days afterwards by the murder of a villager, the suspected lover of a woman higher up the Mbokwo river; he went to visit her and was at once speared by the "injured husband."

The Fans, like most African tribes, with whom fighting is our fox-hunting, live in a chronic state of ten days war; such is the case even where the slave trade has never been known. Battles, however, are not bloody; after the fall of two or three warriors they are dragged off to be devoured, and their friends disperse. If the whole body cannot be removed, the victors content themselves with a "*gigot*" or two, to make soup. The cannibalism of the Fans is by no means remarkable, limited, as it is, to the consumption of slain enemies; the practice extends sporadically from the Nun to the Kongo, and how much further south I cannot at present say. In the Niger and the Brass the people do not conceal it; in Bonny I have seen all but the act of eating; it is execrated by the old Kalabarese, whilst practised by their Ibo neighbours to the north-west; the Duallas of Camaroons number it among their "country fashions;" and though the Mpongwe eschew even the chimpanzie, the Fans invariably eat their foes.

Still no trace of the practice was seen at Máyyán; this, however, is not caused by its civilization. The Rev. W. M. Walker, and other excellent authorities, agree that it is a rare incident even in the wildest parts, but it is rendered unusual only by want of opportunity. The corpse when brought in is carried to a hut in the outskirts, and is secretly eaten by the men only, the cooking pots being finally broken. No joint of man is ever seen in the settlements. The people shouted with laughter when a certain question was asked. The sick are not devoured, the dead are decently interred, except slaves, who, as usual, are thrown into the forest. The chiefs, stretched at full length and wrapped in a mat, are secretly buried, the object being to prevent some strong fetish or medicine being made by enemies from various parts of the body; in some tribes those of the same family are interred near one another; the commonalty are put singly under

ground. During my peregrinations I never saw even a skull. Mr. Tippet, who had lived three years with this people, only knew three cases of anthropophagy; yet the Fan character has its ferocious side. Prisoners are tortured with horrible ferocity, and children may be seen licking the blood from the ground. It is a curious ethnological consideration, this peculiar development of destructiveness in the African brain; cruelty seems to be with him a necessary of life. All his highest enjoyments are connected with causing pain and inflicting death. His religious rites—how different from the Hindu's!—are ever causelessly bloody. As an instance, take the Efik, or old Calabarese. For two hundred years they have had intercourse with Europeans, who certainly would not encourage these profitless horrors, yet no savages could show such an extent of ferocity as the six thousand wretched remnants of the race. I cannot believe this abnormal cruelty to be the mere result of uncivilization. It appears to me rather the work of an arrested development, which leaves to the man all the bloodthirstiness of the carnivore.

After the palaver had been temporarily settled, I wandered through the settlement and sketched the huts. Our village contains about four hundred souls, and throughout the country the maximum would be four thousand, the minimum a hundred or so. The Fan homes are most like those of the Mpongwe, in fact, after the fashion that begins at Cameroons river; they are not, however, so neat and clean as those of the seaboard. A thatching, whose long eaves form deep verandahs facing towards the one street, surmounts neat walls of split bamboo (*Pirni-fera*), planted upon raised platforms of earth. The usual two doors make the hut a thoroughfare, through which no one hesitates to pass; and windows being absent the ceiling is painted like coal tar by soot. The walls are garnished with weapons and nets; in making these they are equally expert; and the furniture consists of mats, cooking utensils, logs of wood for pillows and seats, and dwarf stools cut out of a solid block. The only illumination is by a torch, such as the Mpongwe use, a yard of acacia gum mixed with and bound up in dried plantation leaves. The sexes are not separated; but the men, as in Unyamwezi, to quote no other place, are fond of their clubs, whilst the women are rarely allowed to be idle in the house. The latter must fetch water, nurse the baby, and cook, while the former talk, smoke, and doze. The number of the children makes the hut contrast favourably with the dreary home of the debauched Mpongwe, who puts no question provided his wife presents him with a child.

The dietary of these barbarians would astonish the half-starved sons of civilization. When shall we realize the fact, that the great thing needful to the prosperity of England is, not alm-houses, and hospitals, and private charities, but the establishment, advocated by Mr. Carlyle, of a regular and efficient emigration! The crassest ignorance only prevents the listless pauper, the frozen out mechanic, and the wretched agricultural labourer from quitting a scene of misery, and from finding scattered over Earth's surface spots where the memory of privations endured in the hole which he calls his home would make his exile a paradise. We expect from a national system of emigration, our present great want, not the pilgrimage of a few solitary hands who—Nostalgia is a more common disease than men suppose—are ever pining for the past, but the exodus of little villages, which, like those of the Hebrides in the last century, bore with them to the New World their lares and penates, their wives, families, and friends.

Few of the Fans lack, once a day, fish, fowl, or flesh of dogs or goats, mutton, or game; many eat it twice, and they have a name for the craving felt after a short abstinence from animal food. Cattle is as yet unknown; the woods, however, supply the wild buffalo in numbers. The banana, planted with a careless hand, affords the staff of life, besides thatch, fuel, and fibre for nets and lines. The palm tree gives building materials, oil, and wine; milk is unknown; butter, however, is produced by the "Nje," a towering butyraceous tree, differing from that which bears the Shea-nut; and when bread is wanted, maize rises almost spontaneously. The bush is cut at the end, and burned before the beginning of the rains, leaving the land ready for agriculture almost without using the hoe. In the "middle dries," from June to September, the villagers sally forth to hunt the elephants, whose spoils bring various luxuries from the coast. They are even gourmands. Lately, before my arrival, all the people had turned out for the Ndiká season, during which they will not do anything else but gather. The "Ndiká" is the fruit of a wild mango tree (*M. gabonensis*), and forms the "one sauce" of the Fans. The kernels extracted from the stones are roasted like coffee, pounded and poured into a mould of basket work lined with plantain leaves. This cheese is scraped and added to boiling meat and vegetables; it forms a pleasant relish for the tasteless plantain. It sells for half a dollar at the factories, and the French export it to adulterate chocolate, which in appearance it somewhat resembles. I am ready to supply you with a specimen whenever you indent upon me.

After the daily siesta, which lasted till three p.m., Mr. Tippet begged me to put in an appearance, as a solemn dance, in which the king's eldest daughter joined, was being performed in honour of the white visitor. A chair was placed for me in the verandah, and I proceeded to the exterior study of Fan womanhood. Whilst the men are thin and *élancés*, their partners are usually short and stunt.

"Her stature tall, I hate a dumpy woman," is a point upon which most of us agree with his lordship. This peculiar breadth of face and person probably result from hard work and good fare. I could not bring myself to admire Gondebiza, the princess, although she was in the height of Fan fashion. What is grotesque in one appears ugly in the other sex. The king's daughter was married, fat, and thirty; her charms were on the wane; and the system of circles composing her *personnel* had a tremulous and a gravitating tendency. She danced with all her might, and her countenance preserved a great seriousness. Her dress consisted of leaves covering the hair-horns, a pigtail lashed with brass wire, various necklaces of large red and white, and pink and blue beads; a leaf confined to the upper arm by a string, and heavy brass and copper wristlets and anklets; the *parure* of the great in these lands. The rest of the toilet was a dwarf swallow tail, and an apron of greasy and reddened tree-bark, kept in position by five lines of cowries acting as cestus. The body was also modestly invested in a thin pattern of tattoo, and a gauzework of grease and canewood. The other performers were, of course, less brilliantly equipped. All, however, had rings on their fingers and toes, the arms, legs, and ankles. A common decoration was a bunch of seven or eight long ringlets, not unlike the *queue de rat*, still affected by the old-fashioned English women, but prolonged to the bosom by stringings of alternate white and red beads; others limited this ornament to two tails depending from the temples, at the parts where horns should grow. Amongst them all I saw but one well formed bosom. Many had faces sufficiently piquant. The figure, however, though full, wanted firmness. The men wore red feathers, but carried no arms. Each had his Ndese garters and arm-lets, like the Arab's "hibá's," of plaited palm-fibre, tightened by little brass cross-bars.

The form of dance was a circular procession round the princess, who agitated herself in the centre; it reminded me much of Mr. Catlin. To the sound of o-o-o-oh, all clapped hands, stamped, and shuffled forwards, moving the body from the hips downwards, whilst she alone was stationary, and smileless as a French demoiselle,

in her favourite enjoyment. At times, when the king condescended to "show his agility," the uproar became deafening. The orchestra consisted of two men sitting opposite each other; one performed on a caisson, a log of hollowed wood, with an upper slit; and the other used the national Hânjas, the prototype of the *harmonium*. It is made of seven or eight hard sticks, pinned with bamboo splints to transverse stems of plantain, reposing upon the ground. Like the former instrument, it is thumped upon by things like tent-pegs. The grande-caisse, or large drum, four feet tall, skin-covered and fancifully carved, stood at some distance. Highly gratified by the honour, but somewhat overpowered by the presence, and already feeling that awful scourge the sand-fly, I retired, after an hour's review, leaving the dance to endure till midnight.

The rest of my day and the week following were devoted to the study of this quaint people, and these are the results. Those who have dealings with the Fans, universally prefer them for honesty and manliness to the Mpongwe, and the other coast races. They have not had time to be thoroughly corrupted; to lose all the lesser, without acquiring any of the greater virtues. Chastity is still known amongst them. The marriage tie has some significance, and they will fight about women. It is an insult to call a Fan liar or coward, and he waxes wroth if his mother be abused. Like all tribes in West Africa, they are but moderately brave. They are fond of intoxication, but not yet broken to ardent spirits. I have seen a man rolling upon the ground and licking the yellow clayey earth, like one in the convulsions of death-thirst; this was the effect of a *glass* of trade rum. They would willingly traffic for salt and beads. *The wretched custom of the coast—the White coast—is to supply vile alcohols, arms, and ammunition. How men who read their bibles and attend their chapels regularly, can reconcile this abomination to their consciences, I cannot say. May the day come, when unanimity will enable the West African merchants to abstain from living upon the lives of those who pour wealth into their coffers! !*

The Fan plant their own tobacco and care little for the stuff imported. They also manufacture their pipe bowls, and are not ignorant of the use of diamba-hashistra. They will suck salt as children do lollipops, but they care little for sugar. They breakfast (kidiáshe) at six A.M., dine (domos) at noon, sup (gogáshe) at sunset, and eat if they can all day. They are good huntsmen, who fear not the elephant (nyok), the hippopotamus (nyok á mádzun), or the gorilla

(njé). They are cunning workmen in iron, which is their wealth. Their money is a bundle of dwarf rods shaped like horse-flails, a coinage familiar to old travellers in West Africa, and of this Spartan currency 10=6d. The usual trade medium is a brass rod, of which 2=1 franc, and of the copper 3=2 francs. Llaki, or witchcraft, has not much power over them. In Africa, however, as in Australia, no man, however old, dies a natural death; his friends will certainly find a supernatural cause for it. The general salutation of the Fans is Neboláne, and the reply Am. The nation is divided, as usual, into many ayons or tribes, who mostly occupy different locations. The principal names in the vicinity visited by me are:

Máyyán.	Lálá.	Sánikiya.	Sákulá.
Esobá.	Esánvímá.	Esonzel.	Wámási.

The names of the men whom I met were:

Nál.	Ngoo.	Titevanga.	Jembestroná.
Mábuná.	Yembe.	Njembekona.	Uwá.

The names of the women are:

Aháde.	Nyendongo.	Gondebiza
Menalenguma.	Abome.	Nyágondabyámá.

They have their own names for the neighbouring tribes and places, *e.g.*, the Mpongwe are called Bayok, the Bakeli are Ngom, and the Skekyáni Besek, whilst the Gaboon river is called Aboká. They have no vocables corresponding with our distinctive names of week days, months, or years. "Amos" is any day, opposed to alusha, a night. Suká or sukásuá is the rainy season. Isob the little Cries; oyon, the long Dries, *alias* a year. The Eugon, or moon, is of course used to express a month. Mwásá is yesterday. Emm, to-day. Kirige, to-morrow. Ozán, the day after to-morrow. The only specimen of the language that I can now find time to quote, is its numeralogy. It need hardly, however, be remarked to the Ethno-Anthropological Society of London how instructive and how significant numbers are.

1, Foá (with strong guttural aspirate like the Arabic).		
2, Be.	6, Sám.	10, Abom.
3, Láre.	7, Sàngwá.	11, Abom ná fon.
4, Nne.	8, Wám.	100, Kámá.
5, Tánu.	9, Ebú.	

On the 14th of April, I went, in company with Mr. Tippet and his wives, to the head waters of the Imbokwe river. After descending the stream for a short distance, we turned into the Sondo creek, one

of its northern influents, and presently, after losing sight of mangrove for the first time, we arrived at the village of Takanjok. There, having obtained carriers, we marched through a dense bush cut by streamlets and a few plantations. After a six miles walk over stiff wet clay, we bivouacked for the night in a tall but thin forest. In early morning, a tornado from the north-east broke over us, a curious crash aroused me, and I found that the upper half of a tree had fallen alongside of me, grazing my hammock. When the rain subsided, we ascended the little hill Beká, where, according to the guides, Nkomo and Imbokwe, the two main forks of the Gaboon arise, and on the same evening, after thirteen miles work, of which nine were by water, we reached home at Mayyáⁿ. Our return down the river was enlivened by glimpses of far blue hill rising in lumpy and detached masses to the east. It is probably a subrange of the Sierra del Crystal, which native travellers described to me as a broken line of rocky and barren acicular mountains—tall, gravelly, waterless, and lying about three days journey beyond the wooded hills. Early on the morning of Thursday, 17th April, the *Eliza* was lying off Mr. Walker's factory, and I was received with the usual hospitality by Mr. Hogg, then in charge.

I will conclude this brief record of "first impressions amongst the Fans," with tendering my best thanks to that gentleman for his many little friendly offices, without which travelling in these regions is rather a toil than a pleasure.

P.S.—You will bear in mind that the Fans whom I visited were a comparatively civilized race, who have probably learned to conceal the customs which they have found distasteful to the civilized man. In the remoter districts they may still be determined cannibals. Before long I hope to pronounce an opinion on that point.

EXTRACTS FROM A LECTURE DELIVERED AT MUNICH, 1858,
ON THE DIFFERENCE BETWEEN MAN AND BRUTES.

By Dr. Th. BISCHOFF.

In a primitive and savage state man scarcely believes that there is much difference between him and the brute, especially if they much resemble him. Travellers relate that the Negroes in Guinea, and the natives of Java and Sumatra, look upon the orang-outang and chim-

panzee as men, who do not speak that they may not be made to work.

Advancing civilization leads to another extreme. The differences now appear to man so great that he considers himself to be entirely separated from the brute creation, which he thinks are only existing for his sole use.

Natural science, however, proffers some doubts as to this exclusiveness of man. It cannot admit that every being has only been created for man's good pleasure, but that each creature has an object apart and is perfect in itself. When in the middle of the last century the anthropomorphous apes were introduced in Europe, the greatest naturalists of that time seemed greatly embarrassed to establish the physical characters which distinguish these apes from man, and it appeared to result from their investigations that man was connected with the brute creation by an imperceptible transition.

That was the time when the whole creation was considered as an uninterrupted chain of beings, and it was but natural to suppose that man formed the last link. It was also observed that the human embryo passed through various stages; that it was first an infusorium, then a mollusc, then an insect, a fish, reptile, bird, and a mammal. It was then said, that it is a mere insufferable pride of man considering himself to be anything more or higher than an animal.

This theory was not long maintained. A close investigation proved that, despite of the great resemblance of the apes to man, there prevail physical differences as great as those which enable us to distinguish genera and species. The theory of the chain of beings was also upset. True though it be that many types present a progressive development, there are gaps in nature which are unsurmountable. Again the theory of the passing of the human embryo through the stages of the lower animals was shown to be a general law of development common to all vertebrate animals, according to which they all resemble each other in the first stage of their formation, but from which they become differently formed, sometimes owing to an arrest of development, and even by retrogression.

Though it is not my intention to treat this question from a psychological, but rather from an anatomico-physiological point of view, it cannot be denied that the psychological phenomena which distinguish man are the most important, however obscure these phenomena may be.

It is impossible to deny to animals qualitatively and quantitatively many mental faculties as we find them in man. They possess con-

sciousness. They feel, think, and judge; they possess a will which determines their actions and motions. Animals possess attachment; they are grateful, obedient, good-natured; and, again, false, treacherous, disobedient, revengeful, jealous, etc. Their actions frequently evince deliberation and memory. It is vain to derive such actions from so-called instinct which unconsciously compels them so to act.

But though we cannot deny to animals consciousness, we assert that man alone possesses self-consciousness, that is, the capacity of meditating on himself and his connection with the rest of the creation. I need not point out how from this faculty arise the most important relations of man. I would merely assert that no animal—dog, elephant, orang outang, or chimpanzee—ever exhibited a trace of such self-meditation, either in its own existence or its relation to creation, which faculty is the chief source of the action of man, and which character belongs to every human being not in a morbid or degenerate state.

Vain have been the attempts to refute this assertion by maintaining that the mode by which man and brutes arrive at knowledge is the same in both, namely, by experience, and that it is only a quantitative difference. The way by which both arrive at knowledge may be the same, but the motives which lead to this way are generically distinct, and arise, not from the quantitatively, but the qualitatively different psychical nature of man. The brute gathers experience accidentally. Man searches for experience, and applies his own and other persons' experience for a definite object, and is induced to do so by motives which do not exist for the animal.

Nor is it possible to weaken this specifically higher character of man by shewing that there are human beings who exhibit so little or nothing of this faculty, that they stand in this respect beneath many animals.

Thus microcephali, idiots, and crétins have been adduced as instances. The error is manifest that these unfortunate beings can scarcely be called men: they possess the human shape without being human beings in the strict sense. It is a rule of logic that two things should be compared with each other in their normal condition, and not one thing in a perfect and the other in a mutilated state.

Botocudos, New Zealanders, etc., have also been instanced as scarcely possessing the sagacity of many animals; and instances have been quoted of so-called wild men who, lost in early youth in forests and deserts, grew up like beasts, and exhibited no trace of self-consciousness.

With regard to the most degraded savages, intelligent travellers have always found among them a belief (however crude) in some superior being* as the cause of some natural phenomena. Moreover, the error is generally committed of viewing the actual condition of these savages, and not their capacity. Now, many individuals of so-called civilized nations would not resemble them if we were to apply to them the standard of such men as Aristotle, Newton, Shakspeare, etc. It is the possibility of the development of self-consciousness which decides the human character.

Ancient physiologists have laid down the maxim that the human brain exceeds in size and weight that of any other animal. This is true in by far the greater number of cases. Whilst the human brain is rarely less than two pounds or 1000 grammes, and varies generally between two to three, and even four pounds, the weight of the brain of some of the largest quadrupeds—such as the ox, horse, camel, etc.—is rarely much above a pound, and considerably less in the bear, lion, etc.

In the elephant, however, the whale, etc., it was found that they possess a brain absolutely heavier than the human brain. That of the elephant has been rated at from eight to ten pound, of the whale four to five pounds.

It was then laid down as a law that the brain of man exceeded that of any other creature, when considered in proportion to the rest of the body.

This axiom again holds good in most cases; for while the human brain in proportion to the body is on the average as 1 : 35 to 37, it was found in the whale as 1 : 3,300; in the elephant, 1 : 500; in the ox, 1 : 1000 to 800; in the horse, 1 : 700 to 400; bear, 1 : 265; dog, 1 : 250.

Further investigations have, however, invalidated the general maxim, as in some of the smaller animals, both in birds and mammals, the weight of the brain in proportion to the rest of the body exceeds that of the human brain.

In the canary bird and greenfinch it is about 1 : 14. In some small apes, also, the brain is, relatively to the body, heavier than in man. Thus, in the sajou, 1 : 13; saimiri, 1 : 24, &c.

* [As regards this often quoted assertion that all savages, without exception, have some kind of belief in a God and a future life, Dr. Lang, *Aborig. of Australia*, says, "They have no idea of a superior divinity, no objects of worship, no idols nor temples, no sacrifices, nothing whatever in the shape of religion to distinguish them from the beasts." This statement has been confirmed by Sir Charles Nicholson, V.P.A.S.L. Dr. Mouat has made similar observations respecting the Andaman islanders.—Ed.]

Again, the relative weight of the brain in different animals, compared with their psychical qualities, is against the above axiom, in as much as, for instance, the relative weight of the brain of the ass is double that of the horse, psychically so superior to the donkey.

Comparative anatomy has, however, proved that no animal possesses such a development of the hemisphere and the grey matter as man.

Comparative anatomy has also shown that no animal brain exhibits so numerous, deep, and *asymmetric* convolutions in both hemispheres as that of man.

In some cetacea the convolutions are more numerous, but the sulci are scarcely a few lines in depth, whilst in the human brain they descend in many places above an inch. In some carnivora the sulci are deep, but much less numerous, and always strictly symmetrical on both hemispheres. This applies also to the apes and ruminants, in which the sulci are both less numerous and deep than in man.

There can be no doubt that the arrangement is for the purpose of increasing the surface of the brain. If in the given space of the cranial cavity the brain is to have a larger surface than can be afforded by the inner part only of the skull, the brain mass must necessarily be arranged in folds. These convolutions, and the grey mass of which they are composed, and which in psychological respect is the active portion of the nervous mass, are more developed in man than in any other creature. It would then follow that the psychical status of man corresponds with the greater development of the hemispheres, and especially on the extent of their surface, caused by the number and depth of the convolutions.

The Senses.—There is another character which distinguishes man from the brute, besides the higher cerebral development—the connection of man with the external world by the variety and intensity of his organs of sense.

Though individual animals excel man in the acuteness of some sense, there is none in which all the senses are capable of an equal development. This holds especially good in respect of the organ of touch, in which he by far excels all other creatures. Considering, now, that the development of all our faculties is only effected by sensible impressions, and all our knowledge derived by the medium of our senses, the advantage which man possesses in this respect above animals is sufficiently manifest.

Language. The possession of the power of expressing his thoughts by articulate sounds has ever been considered as the distinctive character of man, it being met with among all human beings, and

absent in all animals. The reason why animals do not speak has generally been attributed to a different organization of the larynx and other appendages. Thus Camper considered the presence of two pouches near the larynx of the orang-outang as an impediment of speech. But all anatomical disquisitions on this subject have failed to explain the absence of articulate language in some animals on merely anatomical grounds. Moreover it is well known that some animals are capable of uttering articulate sounds. Leibnitz speaks of a dog in Meissen which could articulate ninety words.

It is quite clear that language in man must have been the consequence of the necessity of intercommunication with his fellow men, and must have sprung from the psychical nature of man. The necessity of intercommunication between animals being limited to physical desires, such as food, protection, and sexual intercourse, are sufficiently expressed by inarticulate sounds.

The dispute about the origin of language, whether it was a gift of nature or the invention of man, may be decided in this way, that man owes his capacity of speaking to nature, but its application to his own invention. Hence the same notion and the same object is designated in different languages by different words, unless congruent circumstances led to the application of similar sounds.

Upright Stature.—The erect stature of man is the distinctive character mostly dwelt upon by physiologists.

It is true that some plantigrades, as bears, etc., and some apes, can assume for a limited time an erect posture, but this is only exceptionally done; but man in the most degraded state always walks upright, which is the necessary consequence of the structure of his skeleton and the muscles connected with it. . . .

The large and heavy head of man, about one-fourteenth of his whole weight, is so articulated upon the vertebral column that it is balanced upon it. . . .

The legs are so constructed that they perfectly support the body when erect, whilst in a horizontal position they would be very cumbersome. The hand is so clearly an organ of prehension and touch, that it seems unfit to serve as a mere support.

The proportions of the various parts of the human body exhibit a variety and a capacity of development not to be found in any animal. Man alone can stand, walk, run, spring, climb, swim, ride, drive, sit, or lie on his back for a long time. In some of these motions man is excelled by animals, which however are mostly limited to some particular kinds of locomotion. Our jugglers, rope

dancers, contortionists, etc., prove of what a variety of motions man is capable.

Man possesses, in addition, organs of assimilation such as no animal enjoys, owing to the structure of his teeth, the alimentary canal, etc. Indeed, there is no animal in which all the three species of teeth are found in such an uninterrupted proportion as in man. The possibility of the distribution of mankind on all parts of the globe is owing to the pliability of man's organization. But few animals can support, like man, the differences in climate, etc. It is also remarkable that the creatures approaching nearest to man, namely, the orangs and chimpanzes, are so far behind man in this respect, that they soon perish when removed from their native spot.

NOTES ON THE ANTIQUITY OF MAN.

WHEN did man make his first appearance on our globe?

Was man a witness of the last change in the surface of the earth, and of the inundations by which the gravel called diluvium has been deposited? And, if so, must he not have been the contemporary of many of the extinct gigantic animals?

No one doubts that the physical condition of the globe we inhabit, and the history of mankind, are legitimate subjects of human inquiry; and yet frequently where these questions have been raised there has been a great repugnance to discuss them on their own merits, from a vague fear that the facts elicited would clash against popular opinion.

The evidence in favour of a much greater antiquity of the human race than was hitherto allowed has been gradually accumulating. The facts which are everywhere brought to light, though perhaps not as yet universally acknowledged, are sufficiently pregnant, and the deductions from them too important to be any longer ignored; they must be thoroughly sifted, and either affirmed, or, if possible, refuted.

The present paper is a summary of the leading facts and opinions under discussion.

There is a circumstance connected with our subject which appears rather curious. While individuals or families are most anxious to trace their pedigree as far back as possible, and take pride in the antiquity of their descent, and while nations are equally tenacious of their remote antiquity, humanity, in the aggregate, prefers, in relation

to the existence of the rest of animals, to be considered as a modern creation, not dating further back than sixty centuries.

An intense egotism may, perhaps, be at the bottom of this apparent paradox. Man, in his pride, is so much in the habit of considering himself as the last link, as the epitome of the vegetable and animal world, in short as the lord of the creation, that he conceives it beneath his dignity to appear upon the scene until every thing had been duly prepared for his reception.

Chronological Data.—The Book of Genesis has formed the basis of our common chronology on the assumption that it gives the true epoch of the creation of the world and of man; yet the biblical texts differ. Thus, according to the Alexandrian version, 2,262 years are reckoned from the Creation to the Deluge. The Hebrew account has 1,656, and the Samaritan text 1,307 years.

Hence chronological computators greatly differ, and Desvignoles (*Chronology of Sacred History*), has collected above two hundred different calculations, varying from 3,483, the shortest, to 6,984, the longest period said to have elapsed between the Creation of the world and the commencement of our present era, so that the difference amounts to above 3,000 years.

That the Hebrew chronology falls infinitely short in reference to the creation of our globe is almost universally admitted even by those who contend for the consistency of Geology with Sacred History; hence the six days of creation are by many of these reconcilers considered as periods of time of indefinite length.

Hindoo Chronology.—According to the Indian mythology the world is to last four ages (yugs), three of which have already passed. The last, or the kali-yuga, commenced, according to Lepsius, in April 1302 B.C.

Conarda, a Cashmerian king, is supposed to have reigned 2448 B.C., and the era of king Vicramadyta is fixed at 58 B.C.

The pundits, by extending the Chaldean astrological cycle, make it 4,320,000 years.

Chaldean Chronology.—The 36 decans of the zodiac multiplied by the 12 months of the year yielded the mystic number 432. The grand year of astronomy, or the time supposed by the Chaldeans to be required for the sun, fixed stars, etc., to return to the same celestial starting point, was first 25,000, then 36,000, and at last 432,000 years, agreeing with the supposed duration of ten Græco-Chaldean generations. The deluge terminated the cycle.

Chinese Chronology.—Like the early history of every ancient people the Chinese possess also their fabulous and semi-historical periods.

Ante-historical periods (Chine Panthier).

Pankon, the first symbolical man, followed by the three Hoangs. 1st, reign of the sky; 2nd, reign of the earth; 3rd, reign of man. They are comprehended in a grand cyclic period of 129,000 years, composed of twelve parts, called conjunctions, each of 10,800 years. Semi-historical period commences with Fou-pi, first emperor, about 3,468 B.C. Several of his descendants are named who have made discoveries in arts.

The historical period commences with the first king Hoang-ti, about 2637 B.C., falling, according to Lepsius' computation, during the pyramidal period of Egypt. It is certain that art and science flourished in China at a remote period, and the Chinese possessed a high degree of civilization while the Hebrews led yet, under the patriarchs, a nomadic life.

Egyptian Chronology.—Manetho, the Egyptian priest's system of chronology, according to recent investigations, chiefly of Lepsius, is as follows:—

Cyclic periods anterior to Menes.

Divine dynasties—19 gods reigned	13,870 Julian years.
30 demigods	3,650
	<hr/>
	17,520
Ante-historical dynasties	- 320
	<hr/>
	20,840 years.

Advent of Menes, the first king, commencement of historical period, 30 dynasties, 3893 B.C.

Lesueur places the beginning of the Egyptian kingdom 5773 B.C., while Bunsen assumes the 3,643 B.C. In either case, the history of Egypt reaches further back than that of any other nation. Brugsh is said to have brought from Egypt an old manuscript upon leather 4000 years old. How many thousand years have passed before the Egyptians could have become a mighty nation, and have acquired by mere self-tuition—for we have no record that they have learned anything from any other nation—the arts and sciences requisite for the conception and execution of the stupendous monuments and works of art still extant, cannot be determined.

Menes, of the ancient city of This, built the capital Memphis, between the Nile and the Lybian desert. But before Memphis was built there existed already the important cities of Thebes and This.

Language.—Much stronger than the evidence obtained from the chronology of different nations is that derived from the evolution, progress, and development of human language. Whatever view we adopt, it amounts almost to a physical impossibility that a grammatically constructed language should have issued from the mouth of the primitive man. For a very long period language was only transmitted from generation to generation by tradition, and an immense time must have elapsed before the living and dead languages, which are proved to have originated from a common stock, could have acquired a substantive form.

Bunsen, who, with many others, assumes one primitive language, observes,—

“Philosophical inquiry shows the monosyllabic or particle language, as preserved in the ancient Chinese, must be supposed, theoretically, to have preceded the organic language, and either each language separately must once have been like the Chinese, or the Chinese itself is the wreck of that primitive idiom from which all organic languages have physically descended.”

Arguing from such premises, Bunsen considers that, both from tradition and facts, the age of mankind cannot be less than 20,000 years, reckoning 10,000 years from Adam to Noah, and 10,000 years from Noah to the present era.

The question then arises, granting that the Chinese presents the primitive form does it present the primitive idiom? May it not, and has it not, been preceded by languages far more simple in form, and, if so, must not a long period have necessarily elapsed before it arrived at its present systematic form?

Again, assuming that the cradle of humanity was in a confined spot in the east, and that all the nations inhabiting the earth have proceeded from the same protoplasts, how many thousands of years have they required to spread upon the surface of the globe? Have not the first navigators found human beings every where? And again, what an immense period must have elapsed before the typical forms of the various races, supposing them to be the result of external influences, can have acquired that high degree of firmness and permanent development by which they are distinguished.

The naturally slow progress of civilization among primitive people deprived of experience to guide their steps, and forced, as it were, to grope in the dark, like a blind man, and to feel their ground, render the calculation to fix the age of mankind nearly impossible.

It belongs to Egyptologists and chronologists to separate the fabu-

lous from the probability of these computations, they are adduced merely as collateral arguments, which may be taken for what they are worth.

Neither shall we dwell upon the argument that the fragment of pottery found by Mr. Horner at a depth of thirty-nine feet from the surface of the ground, consisting of true Nile sediment, must be held as a record of the existence of man 13,371 years before A.D., reckoning the rate of increase in that locality at three inches and a half in a century.

This much, however, is undoubted, that according to the earliest record the Egyptians possessed a degree of civilization superior even to that of many subsequent centuries, a result which is certainly not compatible with the short time said to have elapsed between the Deluge and the time of the Pharaohs. This applies also to the early civilization of the Chinese, the Assyrians, and the Hindoos.

These perplexing considerations have not escaped the attention of devout believers in scripture authority. They have therefore been hard at work to reconcile the apparent conflict between sacred history and profane facts. Thus, among other theories, has been engendered the *Præ-Adamite* hypothesis, which is too curious to be omitted, and from which it will be observed that the Antediluvian theory is by no means a modern conceit.

In 1655 Izaak Peregre, a Calvinist scholar of Bordeaux, published a work entitled *Præ-Adamite*, in which he endeavours to prove, from certain passages in Genesis and the Epistles of St. Paul, that Adam and Eve were not the first human beings upon the earth. That there were in fact two separate creations of man, the first of which took place on the sixth day, along with the beasts of the earth, and in the same mode, namely, by the Creator merely bidding the earth to produce them. This he contends was the origin of the Gentiles, who spread upon the whole globe and peopled the earth. He further observes that the people of the new-world could not have been the descendants of Adam, separated as the new continent was from the old, they were obviously the descendants of the *Præ-Adamites*.

A long time, that is to say many thousand years after the first creation, God created Adam and Eve, but in a different manner; for God made man himself of the dust of the earth, and breathed into his nostrils the breath of life, and man became a living soul. In the first creation man and woman were created at once; in the second, woman was made out of the rib of man. In the second creation the persons are named, no special names are given in the first creation. From several other passages, specially from some verses from Paul's Epistles

to the Romans, as well as from the chronology of the Egyptians, Hindoos, etc., he arrives at the conclusion that human beings had existed long before Adam was created.

Peyrere's theory met with much opposition. The Paris Parliament caused his work to be publicly burned. The Inquisition took hold of him and forced him to abjure both his Præ-Adamite heresy and his Calvinism. He died in a convent in 1676.

There is no doubt that poor Peyrere was much in advance of his times, and therefore fair game for persecution. That this spirit is not quite extinct among us is proved by the fact that an estimable author, who recently published a similar work under the title of *Genesis of the Earth and of Man*, has not ventured to affix his name to his book. This writer also contends that the Scriptures afford abundant evidence in favour of the existence of Præ-Adamites, and that physical, historical, and linguistic facts confirm this view. It is, however, not a little singular that though this author travels pretty nearly over the same ground as Peyrere, and even quotes some of the same passages, Peyrere's name is never mentioned. One thing seems certain, that science can never be advanced by reconciliation theories.

Leaving now the fields of speculation and religious belief, we must try whether the antiquity of man may not be legitimately deduced from actual phenomena. The records of the living world lie after all in the hidden crust of the earth, every stratum is a page in the book of nature, and tells its own tale of the extinct species of plants and animals. To Geology, then, we must chiefly look for a key to solve approximatively the enigma, so that facts may support or displace theory, and knowledge may be substituted for mere speculation and belief.

Discovery of Fossil Quadrumana.—The great Cuvier, as is well known, was not only of opinion that the date of man's advent upon the globe did not much exceed the common computation of 6,000 years, but that the creation of the simian tribes, so nearly resembling the human organization, was either coetaneous, or but little anterior to that of man. Hence his dictum that human fossils did not exist, and his disbelief that fossil bones of quadrumana would be found. Cuvier's name was a tower of strength, and the circumstance that up to his death no bones of quadrumanous animals had been found in a fossil state seemed to confirm his opinion, and was generally considered as a fundamental fact.

The grass, however, had not long grown on the grave of Cuvier, when his own countryman, Ed. Lartet, discovered in 1836, at Sansan,

in the South of France, in fresh-water strata of the miocene tertiary period, a fossil monkey of the tailless or Gibbon tribe (*Pliopithecus antiquus*). Mr. Lartet, moreover, very recently communicated to the French Academy the finding of a new species of anthropoid monkey by M. Fontan, exhumed from a bank of marley clay at Saint Gaudens (Haute Garonne). The new fossil monkey appears to have surpassed in height living adult chimpanzees. M. Lartet proposed to call it *Dryopithecus Fontani* (Fontani's tree-monkey), as, like the Gibbon, it appears to have chiefly lived on trees. Later evidences, possibly referable to the same species, have been found at Eppelsheim, in Germany.

It is not a little curious that discoveries in one direction, when once made, either succeed each other rapidly, or are even made simultaneously. About the same time as Lartet discovered his fossil monkey in France, quadrumanous fossils were discovered in India by Messrs. Baker and Drummond in the lower range of the Himalayan mountains, where subsequently other fossils of the same kind were found and described by Dr. Falconer and Captain Cautley. They were found in the tertiary strata of conglomerate sand, marl, and clay. In Brazil Dr. Lund discovered, in 1837, similar fossils peculiar to America, and of a species now extinct. A fossil monkey, called by Professor Owen *Macacus Pliocenus*, from the stratum in which it was embedded, was found, in 1845, on the banks of the Thames at Gray's, in Essex.

A great breach having thus been effected in the master's theory, rendering the discovery of human fossils, at all events, less improbable, Cuvier's adherents became seriously alarmed, and a determined stand was and is still being made against anything presented in the shape of a human fossil.

We shall now endeavour to give a short *resumé* of the evidence as far as it goes in favour of the existence of human fossils, far from pretending that the evidence is sufficiently satisfactory to enable us to pronounce a decided judgment.

Fossil Man.—The belief in the existence of giants, founded as it was on the Scripture text, "There were giants on the earth in those days," (*Genesis* vi, 4), was formerly universal, and the finding of fossil bones of gigantic animals was well calculated to sustain that belief.

Thus we read that in 1577 a tremendous storm passed over the convent Reyden, near Lucerne; large oaks were torn up by the roots, and heaps of bones were found, which Dr. Plater, of Basle, declared to be the bones of an antediluvian giant nineteen feet high.

These bones are yet preserved in the Museum of Lucerne, and no person doubted at the time that they were the bones of a giant.

In 1613 a French surgeon, Mazurier, pretended to have found near Chaumont, in the South of France, a brick sepulchre bearing the inscription, *Teutobochus Rex*. This celebrated Teutonic king was defeated and taken prisoner by Marius at the great battle of Aquæ Sextiæ (Aix). The Romans say of him that his head was seen above the standards, and that he was so agile that he could leap over six horses. Taken prisoner about 102 B.C., he slumbered peacefully for seventeen centuries, when he rose again as the king of fossil giants. The skeleton is described as having been twenty-five and a half feet in length, breadth of the chest ten feet, with a skull five feet in diameter. These bones are now recognized to have belonged to the Mastodon Angustidens.

Nor must we wonder at the credulity then prevalent, when we recollect that comparative anatomy was at that time almost an unknown science, so that even the great Leibnitz formed, in 1663, of the mammoth bones found by Otto Guericke, the inventor of the air-pump, a biped skeleton with a large horn upon the forehead which he called the fossil unicorn (*Unicornu fossile*).

But the most celebrated of all alleged human fossils was that found by Professor Scheuchzer, of Zurich, in 1726, in a stone quarry of Eningen. This was the famous "*Homo diluvii testis*." Scheuchzer says of it, "There may still be seen in this rare relic of the accursed race of the primitive world, the circumference of the frontal bone, the orbits of the eye, the ethmoid bone, a portion of the nose, sixteen vertebrae, the first rib covered with petrified skin, and some vestiges of the liver," and he exclaims:

"Melancholy skeleton of an old sinner,
Convert the hearts of modern reprobates."

There is, however, one thing which perplexes Scheuchzer. What has become of the occiput? Either, he explains, the quarrymen of Eningen have broken it off, or, *carcharus quidam*, some dog-fish, has, with its sharp teeth, bitten it right off in the deluge.

It is now known that Scheuchzer's fossil is the remains of a gigantic salamander, which in honour of the discoverer has been termed *Andrias Scheuchzeri*. A small living specimen of an allied species, the *Cryptobranchus Japonica*, is now in the gardens of the Zoological Society. The round mouth of the fossil animal appeared to the Zurich professor to be the remains of a human forehead.

The imagined existence of antediluvian giants and fossil man was thus seemingly disposed of by the progress of comparative anatomy. But an idea once engendered in the human brain bears a charmed life, and though it may remain dormant for a long period, a revival is sure to take place; and thus we find the question of the fossil man is now more agitated than ever.

The term fossil is at present used synonymously with organic remains, though it is well known that in many fossils all organic matter has disappeared and been replaced by mineral substances.

The usual test applied to judge of the age of bones consists in observing the relative proportion of animal and vegetable matter present; if a certain proportion of animal matter be still present, the bone will neither be brittle, nor will it adhere to the tongue and lips; but if the animal matter has disappeared, and nothing but earthy matter remains, the bone will be both brittle and adhesive. Again, by placing the bone into dilute hydro-chloric acid, the recent bone retains, after the removal of the earthy matter, its form in a flexible state, while the true fossil bone will, similarly treated, be reduced to a spongy mass, and dissolve with effervescence.

This is still considered an *experimentum crucis* in relation to the age of organic remains. But is the test infallible and decisive? It appears not.

It is now ascertained that bones of recent animals, introduced into old deposits, may assume, in a comparatively short time, the condition of the bones of extinct animals, while, on the other hand, undoubted fossil bones of extinct animals may, under certain conditions, present a large proportion of animal matter.

Thus we read (Meigs' *Description of a Deformed Skull*, 1859), that a piece of an ancient Burgundian skull, and a fragment of the skull of an ancient Roman, found in a tomb between Cumæ and the ruins of Baiaë, after being subjected to an analytical process, were found to consist almost wholly of earthy matter. The animal matter had almost entirely disappeared. These bones were dissolved in a much less time than the piece from a deformed Jerusalem skull, and their solution gave rise to a very active formation and escape of gas.

The Museum of the Academy of Natural History of Philadelphia, is stated to contain bones of the *Megalonyx* and the extinct *Peccary*, remaining until this day nearly unchanged. It is asserted that very little of the gelatine has been lost, nor a particle of mineral matter added; it is even stated that some portions of articular cartilage and tendinous attachments are well preserved.

Many of the human bones found by Mr. Lund in the ossiferous

caves of Brazil were petrified in the same manner, offering the same metallic break, and penetrated by the same ferruginous incrustations as the bones of the extinct animals with which they were found associated.

The human bones found by M. de Christol in the caverns at Pondres (Departement Herault), contained as little animal matter as those of the hyænas and other extinct animals with which they were mingled; they were equally brittle, and as little adhesive. The test then is, after all, only a presumptive and by no means a decisive one.

M. Pictet* has thus expressed himself respecting the question of Fossil Man:—

“The question may be put thus, at what period has man appeared upon the earth? What was the geological state of the surface of the earth? What animals lived at that period?”

“A precise answer to these questions would be all that could be desired. We have not yet arrived at that point, though it seems we are nearer to it than we were some years ago.

“When the earth was sufficiently cooled down vegetation began to cover the emerged continents. After which the first zoological creation took place, and animals, differing from such as now exist, spread over the earth.

“Elevations and depressions modified the surface of the earth, and be it by the direct action of these phenomena, or by the organic laws which govern the world, and which we do not yet perfectly comprehend, the beings then living disappeared to be replaced by others. These phenomena, or something like them, occurred repeatedly, and thus numerous populations succeeded each other. Each of these has left its remains in strata, formed at different periods, and these remains are the ‘medals of the creation,’ which, with data furnished by geology, enable us to reconstitute the history of the globe. The existence of at least thirty epochs, more or less distinct, are recognized, each of which possessing a special Fauna.

“The imagination is unable to calculate the number of years or eras requisite for the succession of these phenomena, in which all these populations were developed by successive generations.

“As regards the history of man we need not occupy ourselves with these remote periods, we may take as a starting point the formation of the deposits of the tertiary period. These deposits, known by the name pliocene, are the last produced before the period when appeared

* Pictet, *Biblioth. Univ. de Genève*, 1860.

for the first time the actual animal population. They contain the remains of species very similar to such now existing, belonging to the same genera though specifically distinct.

On the termination of the tertiary period, commences the period known by the name of *diluvian* or *quaternary*, which may be considered as the commencement of the actual period, when there existed a group of animals composed in part of existing species, or of such which are now extinct. The more this period is studied the more do we learn that the existing species, considered from a zoological point, date thence their origin, and that since that period there has been no violent but only gradual and, probably, successive extinction of certain remarkable species.

"These gradual extinctions do not admit of any precise chronology as we do not know when the last representative of each species lived. Have the ancient populations existed during the depositions of the lowest diluvian gravel? Have they seen the cave bear, the mammoth, etc.? Or did man only appear when the globe had entered into its actual condition?

"The answer to these questions has varied with time.

"We cannot dissimulate from ourselves that there exists a repugnance to accept the facts relating to the antiquity of man, and that a sort of relief is felt when the facts are contradicted.

"To us, in viewing the question from a palæontological point of view, the antiquity of the races of man is, to say the least, all but certain.

"The animals of the actual world certainly date their origin from the commencement of the diluvian period. There was then a creative force which interrupted, to a certain extent, the natural succession of beings. Is it not more rational to place the appearance of man at this period than to assume a new interruption in a relatively tranquil period, when the condition of the globe much resembled the present? We may also urge another consideration which has never been pressed, which may, nevertheless, possess a degree of reality.

"The presence of man in the diluvian period may, perhaps, explain the extinction of certain species. It, indeed, is remarkable that races of small dimensions, and, so to say, unperceived, have continued, such as small carnivorous animals, rodentia, bats, reptiles, etc., whilst the larger species have disappeared. There seems to us to be no sufficient reason that either inundations or climate should have destroyed them more than other animals. May not man have had some part in their destruction; and is it so improbable to believe that

either for his use or his security he destroyed the stag, the bear, the hyena, and even the mammoth? We do not insist upon these considerations, which are nothing but theoretical, but we could not omit stating them, in order to favourably predispose the reader to accept without preconceived opinions the facts we are about to state.

"It may be said that such imperfect specimens of human industry are insufficient to prove the existence of ancient races. Why is there no pottery, no bones found? It is difficult to give a direct reply. Perhaps the pottery or the bones have not resisted the action of the gravels with which they were rolled about. At any rate, if the hatchets bear really the traces of human workmanship are they not sufficient to prove man's existence?

"Such are the facts observed in 1859, all of which seem to agree to trace the origin of man up to the diluvian period.

"We terminate this article with a few observations on the volcanos of Auvergne, which appear to us to furnish, in relation to the history of man, some documents to which, in our opinion, too little importance has been attached. In 1844 M. Agmard, a distinguished palæontologist, announced the discovery of two human skeletons in the volcanic breccia of the volcano of Denise, near Puy-en-Velay. These volcanos of Auvergne became extinct in the remotest antiquity, and the breccia which encases these bones is not even derived from one of the last eruptions. We may add that on the opposite side of the mountain beds of tufa, apparently contemporaneous with those in which human bones have been found, are certain remains of the diluvian fauna, specially of the mammoth. These facts seem to indicate that man has lived in Auvergne at a remote period, when the volcanos were in a state of activity, and the extinct diluvian fauna still existed.

"This discovery was much contested. In the first place, the authenticity of the pieces enclosing the bones was denied; they went so far as to say that they were fabricated. We believe that at present all doubts on the point are removed. There remains, however, yet a difficulty. The rock where these human fossils have been found consists of two portions, the one compact, in which no bones have yet been found, the other light and porous, which alone contains these remains. It is not impossible that the porous rock may have been disturbed, that is, formed by crushed débris previously detached and again united, in which case they would belong to a more recent period. This hypothesis deserves to be examined.

"We earnestly call for a complete study of this subject, free from

any preconceived theories, to prove the great antiquity of the human species, and thus to contribute so important a page in the history of man."

Human Fossils in America.—Dr. Lund, the Danish naturalist, has given an account of his discoveries in the caves of Brazil, so rich in animal remains. He found human fossils in eight different localities, all bearing marks of geological antiquity, intermixed with those of numerous extinct animals. In the province of Minas Geraes he found human skeletons among the remains of forty-four species of extinct animals, among which was a fossil horse. In a cave on the borders of a lake called Loago Santa, he again collected multifarious human bones in the same condition as those of other extinct animals, and he considers that their geological relations unite to prove that they were entombed in their present position long before the formation of the lake on whose borders the cavern is situated, leaving thus no doubt of their coexistence in life, and their association in death. With regard to the race to which the human fossils belonged, Dr. Lund observes that the form of the cranium differed in no respect from the acknowledged American type. From these facts the American authorities conclude, not only that man was contemporaneous with the extinct animals, but that the aboriginal man in America antedates the Mississippi alluvia.

Professor Agassiz in his lectures, delivered at Mobile, 1853, says:—"Respecting the fossil remains of the human body I possess from Florida, I can only state, that the identity with human bones is beyond question; the parts preserved being the jaws with perfect teeth, and a portion of a foot. They were discovered by my friend Pourtales in a bluff upon the shores of lake Monroe, in Florida. The mass in which they were found is a conglomerate of rotten coral-reef, limestone, and shells.

"The question of their age is more difficult to settle. Considering that the marine animals now living along the coast of Florida have, at least, been in existence one hundred thousand years, for their remains are found in the coral, limestone, and upon the outside reefs, and assuming that the surface of the northern half of the peninsular already formed continued for nine-tenths of that time a desert waste, there would still remain ten thousand years during which it should be admitted that the mainland was inhabited by man and the land animals, vestiges of which have been buried in the deposits formed by the fresh waters covering parts of its surface."

* *Types of Mankind.*

In the Proceedings of the Academy of Natural Sciences, Philadelphia (1846), it was stated that Dr. Dickeson presented a relic of great interest, viz., the fossil *os innominatum* of a human subject taken from a stratum of blue clay, near Natchez, Mississippi, and about two feet below the skeletons of the *Megalonyx* and other genera of extinct quadrupeds. Sir Chas. Lyell acknowledges the bone to be fossil, but expresses his disbelief that it has been found in the blue clay. "He could not ascertain that the pelvis had been dug out in presence of a geologist, or a practised observer; he believed, therefore, that it was picked up in the bed of the stream, and he suggests that the pelvis may have fallen from the summit of the cliff. If it really was found *in situ* at the base of the precipice, its age would more probably be 100,000 years."

It would thus appear that the Americans not merely claim to be in possession of real human fossils, but they assert that they were found in positions which render them doubly interesting, as bearing witness to the very remote period of man's existence upon the earth. As no valid reasons have yet been shown that the relics are not fossil, and have not been found in the positions indicated, the subject is yet *sub judice*.

Dr. Dowler's sub-cypress man (*Tableaux of New Orleans*) caused a great sensation at the time of the discovery, and is still quoted as a fact in the most recent publications. In the excavation of the gas-works at New Orleans, burnt wood was found at the depth of sixteen feet, and at the same depth the workmen discovered the skeleton of a man. The cranium lay beneath the root of a cypress tree, belonging to the fourth forest level below the surface, and was in good preservation. The other bones crumbled to pieces on being handled. The type of the cranium was, as might be expected, that of the original American race. If we take, then, the present era (of the last emergence of the present site of New Orleans) at 14,400 years, and add three subterranean groups, each equal to the living (leaving out the fourth in which the skeleton was found) at 43,200, we have a total of 57,000 years. From these data, it would appear that the human race existed in the delta of the Mississippi more than 57,000 years ago; and then ten subterranean forests, with the one now growing, establish that an exuberant flora existed in Louisiana more than 100,000 years earlier; so that 150,000 years ago the Mississippi bathed the magnificent cypress forests with its turbid waters. In a note sent to Drs. Nott and Gliddon, April, 1853, Dr. Dowler adds, "Since I sent you the tableaux several important discoveries have

been made, illustrative of its fundamental principles in relation to the antiquity of the human race in this delta, as proved by works of art underlying, not only the live-oak platform, but also the second range of subterranean cypress stumps, exposed during a recent excavation in a cypress basin."

As a climax, we add the following ludicrous description of a fossil man and woman, inserted in *Silliman's Journal of Science*.

Fossil Man and Woman.—A Cincinnati paper of March 23rd, 1855, contains a narration of the discovery of "some very curious petrified human bodies" found in Pennsylvania in the bed of a stream, which is one of the branches of the Alleghany river. The account says: "These remains are supposed to be those of a man and woman, who by the wonderful petrificative process have been turned to solid stone," and they are regarded as "irrefragible proofs of the existence of man upon this revolving globe long before the periods when corals, crinoids, and trilobites first made their appearance." But "the man is the great curiosity—its feet are now wanting; its body and legs are composed of sandstone, and its head of quartz and gneiss." Thus, according to the narrator, the whole science of geology is upset over and over. The writer continues, "it is assumed that when first found the feet were on this male petrification, but as they seemed slaty and of a coal-like texture, they were burned by the women, who prefer utility to scientific discovery. It is certain the man when alive must have inhabited the sandstone for a period, and if, as we think is evident, he was buried with his head downwards, and at just such depth that his head came in the gneiss, and his body in the sandstone formation (he might have added, his feet in a coal-bed), then it is easy to conclude that his body petrified into sandstone, and his head into quartz and gneiss."

Had Mr. Barnum got hold of this interesting couple, he would no doubt have retrieved his fortune. The whole story seems one of those hoaxes with which Yankee editors now and then amuse their readers. The explanation of the learned editor is just as curious as his petrifications.

In a work* by Professor Brown, one of the first living mineralogists and geologists, which obtained the Prize of the French Academy, there occur the following passages relating to our subject: "There is no doubt that human bones and works of art have frequently been found mingled with remains of antediluvian animals; but strenuous efforts have been

* *Researches on the Laws of Development of the Organic World during the Formation of the Surface of the Earth.*

made to discard these facts by the hypothesis that they have become mingled at a subsequent period by currents of water, or it was at least maintained that the impossibility of such an hypothesis could not be demonstrated. All the cases, however, are of such a nature that a judge without any preconceived theory, would not hesitate one moment to adopt the simultaneous existence of man with the extinct species found in the same place. Many would have been glad to make the appearance of man the starting point of a new era in the history of the earth. We must, however, acknowledge that it becomes a very difficult point to establish a distinct line of demarcation between the tertiary and the actual epoch."

Human Fossils in Europe.—So long back as 1820, Baron von Schlottheim published at Gotha an account of human fossils discovered near Koestritz, Upper Saxony. They are situated in gypsum quarries, and from their first opening the bones of man were found intermingled without order with those of extinct animals. The bones are contained as collections in Gera, and of the Natural History Society of Altenburg. "These human bones from the nature of the soil could not have been buried there," observes von Schlottheim, "nor have fallen into fissures during battles of ancient times; they are few, completely isolated and detached.

In the year 1853, at the Meeting of Naturalists at Tübingen, some old skulls, taken from old, so called, Celtic graves at Sigmaringen, were shown by the writer of the article on "Fossil Bones" in the *Morgenblatt*; he immediately received a letter from a Professor of Surgery in Edinburgh, requesting the loan of the skulls. English journals had spread the report that the Rev. Mr. Fraas had exhibited to the Society genuine fossil human skulls, which had been recognized as such by the assembly. The error arose that at the time the discussion turned on fossil human teeth of Melchingen, Professor Kurr, of Stuttgart, had such a tooth for years, which had been described and sketched, and which Jaeger and R. Owen had declared to be an undoubted fossilized human tooth. More than half a dozen of such teeth have been found in Melchingen mixed with the bones of rhinocerus and dinotherium, and having the same bluish colour which distinguishes these fossils: This was an enigma, for these teeth must be older than mammoth and megatherium if they were really human teeth. There was no doubt about their being fossils. The problem is now solved. A Bavarian soldier found, 1837, in the Pentelikon, near Athens, remains of monkeys (*Mesopithecus pentelicus*); and in

the same year Lartet discovered similar bones at Sansan. Lartet was sent by the French Academy to Greece, and found a large number of fossil monkeys. The molar teeth of these Greek monkeys perfectly resemble the Melchingen teeth, which are no longer held to be human teeth.

Of the ossiferous caves in Sicily, that which has been often described is the Grotto di San Ciro, two miles from Palermo. Another cave, the Grotto di Maccagnone, about twenty-four miles from Palermo, was lately the special subject of Dr. Falconer's research, as may be found in the *Transactions* of the Geological Society, June 22, 1859.

The interior of the cavern is lined with stalagmite, and at a spot on the roof Dr. Falconer found a large patch of bone breccia, containing teeth of ruminants, bits of carbon, shells of several species of helix, and a vast abundance of flint and agate knives of human manufacture, closely resembling the knives from Mexico, Stonehenge, Arabia, and that they appear to have been formed by dislamination. Dr. Falconer draws the conclusion, 1st, That the cave was filled up within the human period; 2nd, that the coprolites of a large hyæna were similarly cemented to the roof at the same period; 3rd, that subsequently such a great change took place in the configuration of the district as to have caused the cave to be emptied of its contents, excepting the patches of materials cemented to the roof and since coated with additional stalagmite.

Mr. Prestwich gives, as the result of the examination of the bone cave at Brixham, in Devonshire, that numerous bones of the rhinoceros tichorhinus, horse, cave bear, and the hyæna, have been found, and several flint implements, one beneath the antlers of a reindeer, and a bone of the cave bear imbedded in the superficial stalagmite in the middle of the cave.

In a cavern near Mialet (department of Gard), in France, human bones were found mingled with the remains of bears, pottery, bracelets of bronze, and a Roman urn. Tessier, who described this cavern, supposes that the grotto may have at one period been a den of bears, and that afterwards it was taken possession of by the aboriginal inhabitants who left there the coarse pottery, and that at a subsequent period the Romans may have used the cavern as a place of sepulture, which may explain the presence of the urn and bracelets.

Similar caverns have been found in the south of France, as in the caverns of Bize and of Pondres (department Hérault), where M. De Christol found human bones mixed with the remains of pottery and extinct animals.

It is unnecessary to dwell any longer upon what is called the cavern evidence in favour of the antiquity of man. Many geologists still view it with suspicion. This much, however, is certain, that we are furnished with numerous well-authenticated facts of the admixture of human bones and human implements with the remains of extinct animals. Several of the explorers of the caverns, moreover, express their firm conviction that the association of these remains was not accidental, that is to say, the admixture did not take place after each portion had been deposited elsewhere, but that they were entombed at the same time; whence the discoverers infer the contemporaneity of man's existence with what are called the antediluvian animals.

M. Littré* makes the following remarks on some of the human remains found in Europe:—

“The finding of fossil monkeys, not merely in Asia and America, has naturally rendered the finding of human fossils less improbable.

“Not only in America have human bones been exhumed; the skulls discovered in various localities of Germany have nothing in common with those of the present inhabitants. They present a considerable flattening of the forehead, like the skulls of all the savages who had the custom of compressing that part of the head. Thus certain crania, found in the environs of Baden, in Austria, presented great analogies to the crania of African or Negro tribes, while those found on the banks of the Rhine and the Danube presented great resemblances to the crania of Carabs, or to those of the ancient inhabitants of Chili and Peru. It is true these determinations are still objected to by palæontologists: the remains are rare; the strata are uncertain; the bones may have been displaced by accidental circumstances, so that the terrain which concealed them may have appeared ante-historic. All these objections may render a suspension of judgment advisable; but do not oblige us, as is frequently done, to peremptorily reject all idea of a humanity anterior to the present humanity, the more so as it is not easy to dispose of the fact that these crania do not resemble those of the present inhabitants of the respective countries. No doubt these men, whoever they may have been, may have preceded the arrival of the Celts in Europe, and yet appertain to the historical period, though they have disappeared without leaving any trace.

“We have as yet no standard to measure the time elapsed. From the moment when man fashioned the stones to make himself implements to the time when we see him erect temples and pyramids,

* From *Revue des Deux Mondes*, 1858.

and inscribe his monuments with hieroglyphics, a vast period must have elapsed. When the Egyptian priests conversed with Plato, and gave themselves an existence of ten thousand years, present investigators do not consider it as an idle boast."

The Works of Man.—Stone implements were well-known to the ancients by the name of *ceraunia* (thunderstones), and are particularly mentioned by Tacitus, as being used as implements of war. The name was probably derived from the Ceraunian mountains in Epirus, where, on account of the frequent and violent thunderstorms, they were said to be more abundantly met with than elsewhere. It is also known the ancients manufactured of these minerals sacrificial knives, battleaxes, hammers, etc.

Stone implements are also found in great abundance in Spain, and the Spanish peasants preserve them with a sort of superstition, believing, also, that they had fallen from heaven.

Seventy years ago a letter, containing the following passages, was addressed by John Frere, F.S.A., to the Rev. John Brand, then the secretary of the Antiquarian Society. The letter, with illustrations of the objects alluded to, is to be found, page 204, in vol. xiii of *Archæologia*.

"I take the liberty to request you to lay before the society some flints found in the parish of Hoxne, in the county of Suffolk, which if not particularly objects of curiosity must be considered in that light from the situation in which they were found."

Mr. Frere considered these flints as weapons of war fabricated and used by a people who had not the use of metals. They lay in great numbers at a depth of about twelve feet in a stratified soil, which was dug into for the purpose of raising clay for bricks. The strata were as follows:—

1. Vegetable earth, one foot and a half; 2. argill, seven feet and a half; 3. sand mixed with shells and other marine substances, one foot; 4. a gravelly soil in which the flints are found, generally at the rate of five or six in a square yard.

In the stratum of sand were found some extraordinary bones, particularly a jaw-bone of enormous size, of some unknown animal, with the teeth remaining in it. This it appears has been presented, with a huge thigh-bone found in the same place, to Sir Ashton Lever, and is, therefore, probably now in the Parkinson Museum.

The situation in which these weapons were found, observes Mr. Frere, may tempt us to refer them to a *very remote period, even beyond that of the present world*. Mr. Frere further remarks that the

manner in which they lie would lead to the persuasion that it *was a place of their manufacture*, and not of their accidental deposit; and the numbers of them were so great, that the man who carried on the brickwork told me that before he was aware of their being objects of curiosity he had emptied baskets full of them into the ruts of the adjoining road.

This letter, containing such curious facts, pregnant with such important inferences in relation to the history of mankind, seems scarcely to have excited the interest of the learned body to which it was addressed. It does not appear that any discussion was raised on the subject, nor any further notice taken of the communication. The facts and the very name of the discoverer were forgotten, and allowed to lie entombed in the ponderous pages of *Archæologia* for more than half a century before they were disinterred and brought to light again by the zeal of Mr. John Evans. And yet short as the letter is it contains the very essence of all subsequent discoveries and speculations on the antiquity of the human race.

Boucher de Perthes.—Although, as has just been shown, not the first discoverer, yet to M. Boucher de Perthes, the amiable and accomplished president of the Emulation Society of Abbeville, belongs the great merit of having successfully attracted the attention of the learned world to the primitive industry of man. It may be useful to trace the process by which M. Boucher arrived at his conclusions as stated by him in his recent work *On the Antediluvian Man and his Works*. It appears that as far back as 1805, M. Boucher visited the Roland Grotto, near Marseilles, and in 1810 the Grotto de Palo, in the Papal dominions, where among some animal bones he found certain flints, which struck him as having been worked. The yellow tint which distinguished some of these stones made him suspect that they were not in their original position, but that the colour was due to the ferruginous nature of the soil with which they were originally in contact. As certain beds of the diluvians exhibited the same shade as the flints, his endeavours were chiefly directed to find the stones *in situ*.

Circumstances favoured his labours. Extensive works undertaken for the fortification of Abbeville,—the digging of a canal, the preparations for the railroads between 1830 and 1840, successively laid open numerous beds of the diluvium, upon which the valley of the Somme reposes. It was in 1838 that M. Boucher first submitted his implements to the Society of Emulation of Abbeville for inspection. In 1839 he brought some of them to Paris, where he showed them to

several members of the Institute, among others to M. Brogniart, who was perhaps more than any other interested that the discovery should turn out a delusion, because he held with Cuvier that man was of recent origin, and not the contemporary of the extinct pachydermata. M. Brogniart was, however, soon converted. M. Boucher entertained strong hopes that his work on *Antediluvian Antiquities* would dissipate all doubts. Nothing of the kind. Nobody would believe his theory, which every one who chose could have verified on the spot; it met with utter neglect.

It was thus that M. Boucher's theory peaceably slumbered for seven years, until in 1854 Dr. Rigollot, who, on mere hearsay, had for ten years been a staunch adversary of the antediluvian theory, decided to judge for himself by visiting Abbeville, Saint Acheul, and Saint Roch. His conversion was prompt and decisive, and, like an honest man, he publicly declared his error in a memoir on flint instruments found at Saint Acheul, Amiens, etc.

"This clear and conscientiously written memoir," says M. Boucher, "recalled attention to my work. Its reception was, unfortunately, not favourable. Being a purely geological question, it became the subject of religious controversy. Those who did not attack my religious belief accused me of temerity. What! an unknown archæologist, a geologist without a diploma,—a strange pretention indeed to attempt subverting a system confirmed by long experience, and adopted by the most eminent men on science!

M. Boucher, however, persevered, and he is now reaping his reward; for, as we shall presently see, the most distinguished geologists now range themselves by his side.

The questions we have to deal with in relation to flint implements are the following:—

1. Are these rude objects, which pass by the name of antediluvian hatchets, really of human workmanship? or may we not, with equal probability, assume that the shape of these flints is simply accidental, and produced by natural agencies.

2. Are they found in undisturbed ground, and if so, what is the probable age of the strata in which they are imbedded?

3. Assuming that the flints are the result of human labour, was man the contemporary of the extinct mammalia, with the bones of which the flint implements are associated.

4. What race of men was it that fabricated the implements?

There can be no doubt that, at first sight, even an unprejudiced investigator may see in these rude flints, with their rugged surfaces, nothing, or at least very little, characteristic of human labour.

It is equally certain that flints may, by being knocked about with other hard stones, or by other agencies, be naturally fractured in a variety of curious shapes, simulating the forms of implements or other objects. How, then, are we to distinguish between the accidental forms or freaks of nature, as some have called them, and those produced by the human hand?

Mr. Edwards, of Birmingham, asserted that he saw in his own glass manufactory the operation of a natural law producing fragments of glass, (a kindred material to the flint), which closely approach the forms of celts. When any imperfection renders an article useless for its intended purpose the workman puts it away without annealing it, when in a few minutes it is riven to fragments, which will be found invariably either wedgelike, or following more or less the general shape of arrow or spear heads.

The theory which he bases upon these facts, he states thus:—"I suppose that in the early geologic periods masses of flint or large boulders may have become heated by subterranean fires, and while in an incandescent state have been suddenly thrown by volcanic force to a cool place; the outside of the mass would soon begin to contract, while the inside would retain its heat and its expanded condition: the struggle between the two forces would go on until the mass was rent to fragments, and each of these fragments would be one of the 'works of art,' of which we have lately heard so much." And of which, we venture to say, Mr. Edwards will hear much more in time to come.

To this theory of a practical man, Dr. Collyer simply replied that, in the first place, "the parallelism is not correct, as the substances are so different in their structure and their mode of production.

"Secondly, had calcination or heat been the cause of the chipping or fracture of the portions, which indicate them to be work of human agency, how is it that those portions of the boulder, not essential to the instrument, are always left unchipped?

"And, thirdly, had calcination in any way acted in producing these partial detachments, how is it that the untouched surface does not exhibit the action of fire?"

Characteristics of Antediluvian Implements.—The commercial adage that demand creates supply, applies equally to flint implements. Not unlike the manufacturers of relics in the holy cities of the East, the workmen at Abbeville and St. Acheul soon found it to their advantage to fabricate antediluvian hatchets on their own account, and to pass them off to visitors as the genuine article.

Thus M. George Pouchet tells us that when, in August 1859, he visited Saint Acheul, the miners tried to impose upon him; but he soon detected that the pretended *langue de chat* was a deception, and that the flint had been fraudulently introduced into an artificial cavity. When, however, after the lapse of some days, he succeeded in finding some hatchets embedded in the diluvium under such conditions that a mystification was out of the question, his doubts were removed, and he came to the conclusion that the flints are objects worked by man at a period long anterior to that usually assigned to man's appearance upon the earth.

It is, therefore, of some importance to distinguish the spurious from the genuine implements. M. Pouchet thinks that in the progress of time infiltrations reached the diluvium, depositing a crust of carbonate of lime of about one millimetre in thickness upon one of the surfaces of the flints *in situ*, which incrustation is seen upon all the genuine hatchets at Saint Acheul, and is absent in the spurious flints fabricated by the miners. Some of the genuine implements have, moreover, the characteristic peculiarity of presenting upon the surface, not covered by calcareous deposit, dendritic impressions. Though the existence of dendrites is not an absolute mark of diluvian implements, since it is also found upon some Celtic hatchets, it still offers in most cases a fair presumption in favour of great antiquity.

Colour.—The hatchets found at Amiens are all of flint, and of three colours; black, white, and red. The red and the white generally occupy the superficial layer. The hatchets found in a dry soil have remained black. Those reached by ferruginous infiltrations have become red. The diluvian implements have, in fact, generally the colour of the stratum in which they were embedded; so that a flint deposited between two different seams bears on each surface the colour of the respective seam with which it was in contact. This double shade penetrates the stone, the internal part being generally black. In post-diluvian implements the colour is generally the same throughout. Thus a Celtic hatchet may be imitated, but a spurious diluvian implement is easily detected. Diluvian implements have never been found polished.

Another great characteristic of worked flints is their striking resemblance to each other in almost every country where they have been found. Individually each diluvian implement may be considered an accident; but when viewed collectively, and it is seen that the chips have been taken off in the same places and in the same manner, presenting identical forms, obviously the result of identical intention, we

are irresistibly led to the conclusion that the hand of man has done it. Wherever they have been found, whether in the east or in the west, in the south or in the north, they resemble each other in form, though they may differ in finish.

On comparing the woodcut representing the flint implement found by Mr. Taylor in the Mound Abusharein (see *Proceedings* of the Society of Antiquaries, No. 2, 1860) with that of the flint weapon found by Mr. Frere, at Hoxne, in Suffolk, as it appears in the thirteenth volume of *Archæologia*, published about sixty years ago, they appear nearly identical in shape and external aspect.

M. Boucher's collection of flint instruments, probably the most interesting of the kind in existence, is arranged according to the beds in which they were found.

1. Modern remains. 2. Medals and other metallic objects of the Roman period. 3. Similar objects found at greater depth, mingled with stone hatchets of the Gallo-Roman period. 4. Stone hatchets of the Celtic period, found at a still greater depth, not mixed with metallic objects of the Celtic period. 5. Objects from the soil beneath the Celtic bed, consisting of two strata, the superior stratum presenting no traces of human workmanship, while the lower stratum is the diluvium containing the implements called by M. Boucher "antediluvian hatchets."

One of the most serious objections* which have been urged against

* One of the objections which was originally urged against the assumption that these implements are works of art is the large quantity found in certain localities. Thus, one of our most esteemed antiquaries, Mr. Thomas Wright, said, (*Athenæum*, June 18th, 1859), "The quantity of these implements which are found—two or three hundred in one gravel pit, with an intimation that they occur similarly through the whole drift formation, seems to me to be quite enough to make us hesitate. If we receive them as made by the hand of man, we must suppose that at this extremely remote period the surface of the globe was covered with human beings, who spent all their lives in chipping flints into the rude forms of weapons, and throwing them about."

Another circumstance that induced Mr. Wright to disbelieve that these flints have been fashioned by the hand of man, is the total absence of anything of what we call finish, and that the forms might have been produced naturally, by violent and continued gyratory motion—perhaps in water, in which they were liable to be struck by other bodies in the same movement."

Now the absence of anything like "finish," which is urged as an objection, chiefly by archaeologists who, it has been well observed, are more accustomed to the productions of a later period, may be disposed of by the fact that even some of the Celtic hatchets found in Celtic graves, and the authenticity of which is undoubted, are equally uncouth, unpolished, and produced by simple percussion.

Despite of their rough surface the objects present generally such a uniform shape, which stamps them as the work of man. In many of the hatchets it is found that the circumference describes regular elliptic curves, the two surfaces being convex and symmetrical like a lens. The implement is seen to diminish gradually on all sides. No flints broken by accident or design furnish such regular forms. Hence, even the workmen in France were struck with their regularity, and gave them the name of "cats' tongues."

the worked-flint theory arises from the circumstance that no human bones, which are considered as capable of preservation as those of the extinct animals, are found in the same beds with the flints. But though there can be no doubt that the finding of human fossils in the diluvium mingled with the works of man would at once clinch the argument, their absence cannot invalidate the legitimate deduction of the geological theory, unless the evidence in favour of the flints being worked be entirely rejected.

In the last edition of Professor Phillips' *Manual of Geology*, that gentleman expresses his surprise that the bones of man should so rarely be met with in the deposits of the diluvium, since at that time the earth had assumed its present form, and was inhabited by quadrupeds closely allied to those which now exist, especially the horse and domestic cattle, so singularly serviceable and dependant on man. He justly observes that those parts of the earth's surface to which tradition and, perhaps, general reasoning seem to point as the first sites of the human race, the central regions of Asia, have been as yet little examined with reference to this question. It may be very possible to discover these there even in abundance. Upon the whole, he considers that it may be stated, as a general admission, that man did not exist on the globe during the secondary and, probably, not during the epoch of eocene and pleiocene formations, and that, though sufficient evidence for man's coexistence in northern climes with the mammoths and hippopotami is yet wanting: but as the races of oxen, horses, camels, etc., had then begun, it is not an unreasonable expectation that eventually the question will be decided in the affirmative.

Boucher de Perthes, in a letter addressed to the secretary of the Paris Anthropological Society,* writes that he found his first antediluvian hatchets in 1839; that he had shown them to several academicians in 1840, especially to M. Alexandre Brongniart. That he had excavated them a year before the miners of Abbeville had discovered any, and that he had considerable trouble to teach the workmen to distinguish the worked flints. It was the same with the miners at Amiens, who only commenced to search for them in 1853, after M. Rigollot had taught them how to distinguish the flints.

M. de Castelnau, after stating that he has no preconceived idea against M. Boucher's doctrine, considering that the ideas of Cuvier in regard to the recent appearance of man had appeared open to many objections, still required rigorous proofs. Now, among the imple-

* Séance Nov. 17th, 1859.

ments presented, there was in his opinion but one perfectly characteristic of human workmanship, namely, hatchet No. 5, found by M. G. Saint-Hilaire, and justly referred to by him to the Celtic period. It is even questionable whether this object without a handle, and which was used rather as a wedge (*coin*), deserves the name of a hatchet. He still more objected to that name being given to the older objects, of which the forms are so different from the form of real hatchets. These latter, excavated from the diluvium, appeared to him very doubtful. Are these coarse, irregular, angular objects, with their rugous surfaces, really the result of human labour; and may they not with equal probability be attributed to the percussion of flints rolled in the same torrent?

Among the innumerable fragments, there may be some the forms of which remind us of the implements fabricated by man at a later period, and which are designated by the name of Celtic hatchets.

M. Baillarger agrees with M. Castelnau, and excepting the Celtic hatchet, sees nothing characteristic of human labour in the other objects. He also considers the name of hatchet objectionable. A hatchet should have a handle and a hole to receive it. This hole exists in some Celtic implements, which then deserve the name. There is no trace even in Saint-Hilaire's implement of a hole; it was used as a wedge.

M. Broca considers that the name given to these implements is of little importance. Some of the Celtic implements have holes, and bear legitimately the name of hatchets; others have none, being evidently the product of art less advanced. As to the diluvial instruments, it is merely by extension that the name hatchets has been given to them.

M. Castelnau. If the flints in question are really worked by the human hand, that race must have been much inferior to the present race. A race which has left no other traces of its industry than these crude and nearly shapeless objects, can have been but little superior to the monkey species. Much more mental energy would not be required by the gorilla to produce similar instruments.

M. Bertillet. At first sight, one is apt to agree with M. Castelnau, but a closer investigation shows that, despite the irregular asperities of the surface, the objects present such a general uniform shape, as is the index of real workmanship. He draws attention to hatchet No. 1. Setting aside the superficial rugosities, the circumference describes a regular elliptic curve; its two surfaces are convex and symmetric, like those of a lens. The maximum thickness ex-

actly corresponds to the centre of the ellipse, the instrument then gradually diminishes on all sides. He had seen flints broken by accident either by the hand of man or other violent action, but had never seen forms like those presented. Certainly, if the object were polished, it might be compared to the best works of a later period. This particular form extends to a large number of the implements, and the picturesque name "*langues de chat*" given to them by the miners shows that they have been struck by their regular forms. The objection that the surfaces are rugous appeared to him without much value. The first men possessed no metallic engines requisite to polish hard stones, an art but slowly developed. Even hatchet No. 4, found by Boucher de Perthes in a Celtic sepulture, the authenticity of which is undoubted, still presents a rugous surface, and appears to have been produced by simple percussion, like the implements of the diluvium.

M. Lagneau. It would be of the highest interest to determine the period in which the race of men lived who fabricated the implements found at Abbeville and St. Acheul. The race was, no doubt, anterior to the Celtic epoch; and may be anterior to the so-called original race which preceded the Gauls and Celts in western Europe. The race of the ancient Britons, of which the English anthropologists have found traces in the British Isles, and which Dr. Ware of Edinburgh, from a passage of Tacitus and other documents, considers of Iberian origin, had been supplanted and destroyed by the Celts. Is it by this antique race, which probably had also occupied the north of France, that the diluvian hatchets had been worked? Was it not rather to a still older race, with narrow crania and a sharp facial angle, such as have been found by Mr. Spring in the environs of Namur, that they must be attributed?

M. Castelnau still objects. Let it be remembered that flints for firearms were formerly fabricated by mere percussion, by which they received a perfectly regular form. Even at this day, savage nations, ignorant of the use of metals, produce stone implements, which may be considered as masterpieces compared with the objects found in the diluvium. He persists, therefore, in his opinion, that if these flints are really the work of man, the race which fabricated them must have been much inferior to the present race.

M. Broca is disposed to admit with *M. Castelnau* that an antehistoric race, of which Boucher de Perthes has discovered the traces, was much inferior to the succeeding races, and probably inferior to any existing, though it be somewhat difficult to conceive a human

race inferior to the Tasmanian, to the Aïgta of the Philippines. It may be remarked that the human crania, more or less fossil, found in Europe, in old strata beneath modern beds, belong mostly to the prognathic race, much inferior to the races which occupied Europe since the historic age. The fossil cranium, found in 1844 by M. Aymard upon Mount Denise near Puy-en-Velay, presents, it is true, the Caucasian shape, but the crania discovered in the environs of Baden, in Austria, present the African type; while those found on the borders of the Rhine and the Danube approach the shape of the crania of the Caribs. The human bones found in Mount Chauveau (Namur), forty metres beneath the bed of the Meuse, are thus described by Dr. Spring. Cranium very small in the absolute, also very small when compared with the considerable development of the jaws; forehead receding, temples flattened, nostrils large; dental arches very voluminous, inclined forwards, supporting oblique teeth; facial angle about seventy degrees. The bones of the limbs rather short, indicating a stature not quite as high as that of the Laplanders. It may be added that this race cannot be compared with the actual hyperborean race, who have large globular heads and vertical teeth. It must then have been a race actually extinct, whose small crania, development of the jaws and prognathism, are evident marks of inferiority. It becomes thus probable that the human beings who lived before the formation of the diluvial beds, more ancient than those whose bones were discovered by Dr. Spring, must have been of at least an equal inferiority.

These and other considerations induce the belief of an inferiority of these primitive races. The mere rudeness of the diluvian hatchets is scarcely sufficient by itself to come to that conclusion, as it requires a long time before even an intelligent race, deprived of the use of metals, arrives to a degree of producing refined objects of industry. If a number of Europeans were landed on a desert island, naked and without any instruments whatever, they would be much embarrassed to produce, without any metal, objects much more perfect than those flint implements.

M. Baillarger. It seems to result from the discussion that some, at least, of the flint implements found in the diluvium are really of human workmanship, which, in itself, is of great importance; but what is of greater interest is to appreciate, if possible, the intellectual state of the people who produced them. It seemed to him that the race was physically and morally inferior to the succeeding races. The smallness of the skull and of stature, the great development of the

jaws, concur to prove it. The race exists no longer in Europe as a race, though they spring up occasionally among actual races. Such individuals bear the name of Microcephali, of which he promised to give some account to the society on a subsequent occasion.

*M. Broca.** The absence of polish cannot be considered as a negative proof, as hatchet 4 from a Celtic sepulchre, is equally cut by percussion, which may also be said as to the knives, for a similar Celtic unpolished knife has been in a Celtic grave. Has no doubt whatever as to the relative inferiority of the primitive races, as everywhere their bones belonged to inferior types. Jass Steenstrup, of Copenhagen, states that in the inferior beds of Denmark all the crania are brachycephali. These brachycephales of Denmark have not passed the stone period. The initial period of human existence might be called the age of wood, when the ancient heroes, like Hercules, fought savage beasts with clubs. This period did not last long, and the stone period commenced. The Autochthones of Denmark, described by M. Steenstrup, lived, nevertheless, at a more recent period than those who fabricated the hatchets found by M. Perthes in the diluvium. The former were sufficiently advanced to polish the flints by friction. We also find in the so-called Celtic period (though much anterior to the actual arrival of the Celts), cutting instruments produced not by simple fracture but by repeated friction. It must be added that the position of these hatchets in the bed of the diluvium indicates that the period was separated from the present epoch, if not by a general geological revolution, at any rate by a local cataclysm, in which possibly the primitive race has perished like the elephant and rhinoceros. Possibly, also, the people saved themselves in time. And until human bones were found in the diluvium it might be a doubtful question whether the brachycephalous race existed in Western Europe before the arrival of the Celts and other dolichocephalous races, descended or not from these people, the traces of which were discovered by Boucher de Perthes.

M. Trelat. It has been said that the people who made the flint implements must have possessed but little intelligence. I have examined the arms of the savages of Oceania, in the Anthropological Museum of the Louvre, and although these races had ample means to perfect their industry for centuries, and though a great many of their arms exhibit considerable skill, flints still serve them as cutting instruments. There are some of these polished, others are rough;

* Séance December 15th.

some are fabricated by percussion, others by friction. I must also observe that the expressions, stone, bronze, and coin period must not be taken literally. The invention of the hard metals did not immediately make the peoples renounce stone implements. Among the objects found in the Danish and Scandinavian tombs, even down to the ninth century of our era, stone instruments are found commingled with metallic implements. I was also anxious to ascertain the cause of the white or greyish colour which characterizes most of the hatchets of the Celtic period, and which might cause the belief that they are made of calcareous matter. These hatchets are really flint, despite the appearance, and their colour is due to the calcination to which they had been subjected. This was a common practice amongst the Gauls. They thought, by subjecting them to fire, their arms became harder, and it was not merely the stone implements, but also their wooden arms which were thus treated.

Surprise has also been expressed at the great number of worked flints found in confined spaces at Amiens and Abbeville; the following facts may, perhaps, explain it. Not far from Dieppe is a spot called *la cité des limes*. The origin of the word, and the date to which most refer the existence of this so-called city, is unknown. I have preserved the name city, as such is the expression, though it is well known that the ancient Gauls did not build; their cities were but intrenched camps, where they elevated some rude huts. Well, in this *cité des limes* there have been found the vestiges of an ancient manufactory of flint implements. A great many of these have been found to be knives produced by chipping, as well as polished hatchets. Here various instruments were separated from each other at regular distances. One of these hatchets is polished at one end and rough at the other. None of them has a hole for the handle. They were handled by pincers, as the islanders of Oceania do to this day. The process of pinching was conserved for a long time even for bronze instruments. I have seen numerous examples of them in the Louvre.

There has been found, at St. Acheul, a very different object; it is a necklace, or rather a bracelet, composed of about twenty spheric beads, varying from seven to fourteen millimètres in diameter. All these beads are perforated by a central hole, and are mostly composed of a rather soft calcareous substance. Two of them are cut out in a mass of madrepore. All these beads were evidently parts of the same ornament, for they were found very close to each other.*

* The *Coscinopora globularis*.

M. G. St. Hilaire. The fact communicated by M. Trelat supports the opinion of M. Dunoyer, who believes to have found, at Amiens, the vestiges of an ancient manufactory of worked flints.

M. Bertillon has read, in *Cosmos*, that in Spain a large number of stone implements had been found, both in the soil and in the tombs. The Spanish peasants preserve these implements with a sort of superstition. The author of *Cosmos* thinks that these instruments were not arms, but were used by the ancient Iberians for religious ceremonies. They were believed to have fallen from heaven.

M. Broca agrees that the expression, stone, bronze, and iron period must not be taken in an absolute sense. A new industry does not immediately replace an old one. The first metallic instruments were too precious and rare to be general. The chiefs only possessed them, while the people for a long time after used stone implements, and several centuries had elapsed before the use of the stone implements was given up. Nevertheless the intermediate period was not so long as imagined by M. Trelat; that it continued in Denmark until the ninth century. As these implements figured also in the religious ceremonies, they were deposited in large numbers in tombs, as long as the same culte continued. Thus, then, in Denmark they are found as late as the ninth century, because at that epoch the Danes embraced Christianity. But it must not be believed that they used the implements until that period as tools or arms.

Now far be from us to complain of the opposition which the worked-flint theories have met with. There is scarcely an instance of any great truth or any great fact having been enunciated without having been received either with a shout of derision or violent indignation, not merely by the ignorant masses, but by learned bodies. And thus it should be; it is the constitutional opposition in the republic of the mind. Every alleged new truth is frequently so much mixed up with error, and every new fact so much combined with fiction, that they are all the better for undergoing a thorough sifting examination. But there is a medium in all things. Whilst there is and ought to be a rational scepticism which tries to prove all things, and holds fast to that which is good and true, there is also such a thing as fanatical scepticism, which shuts its eyes to all evidence, and tortures itself to find out the most far-fetched and improbable hypotheses for rejecting or explaining away any new fact or hypothesis, specially in such cases when the new theory apparently clashes with long cherished and preconceived notions.

We shall endeavour to examine whether the opposition to the

worked-flints theory, with the evidence in its favour, partakes more of the former than of the latter character.

There is one stubborn fact which cannot be gainsaid, and which is this: that all who have visited the spots, though they may have come to scoff have remained to pray; that is to say, went away with the conviction that the worked-flint theory is a great fact.

M. Alfred Maury, member of the French Institute, formerly a sceptic, after having found the traces of man in undisturbed ground, on the banks of the Somme, says,* "All doubts raised by geologists as to the exactness of Boucher de Perthes' observations must vanish. Man has, indeed, left the proofs of his existence at a period the antiquity of which cannot yet be calculated, but which contradicts all historical inductions. These hatchets cannot have been transported from afar, for their edges are scarcely blunted; they denote a very primitive state of human society."

Professor Albert Gaudry, of the Paris Museum of Natural History, the author of several works on Palæontology, was sent to Amiens and Abbeville, in August 1859. After having minutely examined and analyzed the soil, and found that it had not been disturbed, he extracted, in the presence of MM. Hittorf, Ponsard, and Garnier, nine hatchets from the rock in which they were embedded among fossil bones. His Report to the Academy of Sciences, read October 3rd, contains the following conclusions at which he had arrived.

1. Man was the contemporary of the *Rhinoceros tichorhinus*, *Hippopotamus major*, *Elephas primigenius*, *Cervus somonensis*, and other extinct animals.

2. The bed called by geologists the diluvium has been formed, partly at least, after the appearance of man. The formation has doubtless been the result of the great cataclysm.

Professor Gaudry cautions investigators not to quit the miners for a moment, and to assure themselves that the implements are *in situ*.

M. de Saulcy, the celebrated antiquary and traveller, who at first strongly opposed the theory of the antediluvian man, now expresses his opinion that the presence of the works of man in the diluvium, and the existence of man at the same time and at the same places with the huge animals now extinct are incontestable facts.

M. Lartet says†—"Of all discoveries proving the high antiquity

* *Revue des Deux Mondes*.

† Extract from a Note presented by M. E. Lartet to the Academie des Sciences, March 19th, 1860, on the "Geological Antiquity of the Human Race in Western Europe."

of the human species in the west of Europe, the worked flints collected by Boucher de Perthes are the most conclusive evidence.

"It is now admitted as a geological fact that England and the continent were united anterior to any historical tradition. This continuity is proved also by the actual presence, on both sides of the channel, of the same species of land animals the original intermigration of which could only have taken place on terra firma."

D'Archiac (*Bulletin de la Soc. Geol.*, t. x) thinks that the separation of the British Isles from the continent had taken place *after* the deposit of the diluvian gravel and before the ancient alluvion. The fact is, that the phenomenon which has produced the *Loess* or ancient alluvion in the north of France and Belgium has left no trace in England. On the other hand, Elie de Beaumont has clearly indicated the relations between certain dislocations of the system of the great Alps and the erratic alluvions in our valleys. The conclusions to be drawn from these hypotheses are manifest: the human race which has fashioned the flints of the diluvium of Abbeville and Amiens had taken possession of that country at the time the British Islands were yet connected with the continent, since the separation of these isles had only been effected after the formation of the diluvian banks where the implements are found. As the formation of these diluvian banks was one of the consequences of the last Alpine dislocations, the same human race must have existed before central Europe had attained its actual orographic state. The apparition of man in the *western regions of Europe* must therefore date from an epoch when the surface of that continent must have been considerably different from what it is now.

The question now is, has there, between that phase of the human period and the present one, *in that part of our continent*, been a sudden great revolution—a catastrophe sufficiently general—so as to interrupt a regular succession of organized beings? Do we find of such a catastrophe indubitable traces? If in the class of mammalia we find the disappearance of some species (ten at most), observation tends daily to establish that this disappearance was the result, not of a simultaneous destruction, but of successive extinctions, which appear to have been gradual in time and space.

We arrive inevitably at the conclusion that the terrestrial population of our continent has passed through all the so-called critical phases of the long *quaternary* period so variously affected by geological phenomena. If the persistence of species and the continuation of habitat has been possible for animals of all kinds, it must have been equally

possible for man their contemporary, placed in the same circumstances. Why should there have been a biological intermission as regards man only when it is demonstrated that there was none in the animal species."

M. Lartet also writes*—"I drew, also, the attention of the Academy to observations since frequently made on the traces of intentional action on the fossil bones found in the same beds as the flints, or in other layers of the same age. In announcing, not without hesitation, these facts, I had no wish to force their immediate adoption, but rather to provoke researches in the same field. Now, however, as new observations seem to confirm my first impressions, and being now able to submit well authenticated specimens for the examination of men eminent in science, I feel more confidence in submitting the following conclusions.

"The impressions on the fossil bones are evidently the work of man. These marks consist of excisions and incisions so neat and penetrating that they could only have been effected on the bone while yet in a fresh state not yet deprived of animal matter. The numerous fossil bones which present these incisions belong partly to large extinct mammalia of the pre-historic period (*Megaceros hibernicus*, *Cervus somonensis*, *Rhinoceros tichorhinus*). Others belong to the common stag, the aurochs species, still existing. The marks on the latter are not less valuable considering that these bones have been found in the same beds intermixed with the bones of the *Elephas primigenius*, the rhinoceros, and the *megaceros*.

"I may also observe that remains of the aurochs, of the stag, and of other still existing species, have been found in England, France, and Italy in the lower tertiary strata, and ought consequently to be older than those in which the bones of the *Elephas primigenius* and *Rhinoceros tichorhinus* are found. Thus, the aurochs and the stag are more entitled to be called antediluvian animals, if we are determined not to banish this improper expression from science.

"I ought to add that hitherto I have not observed unquestionable traces of human workmanship on the bones of the fossil elephant nor on those of the great carnivora of that epoch. The worked bones found in the caves belong nearly all to ruminants or horses. I have, however, found upon rhinoceros bones well marked impressions. The observations, however, on cave bones do not furnish the same degree of precision and certainty. I refrain, therefore, from drawing from them any deduction.

* "Geological Antiquity of Mankind," *Comptes Rendus*, April 19th, 1860.

"I would but remind the Academy that the specimens presented with my note on March 19 are all well authenticated as coming from the diluvium, the geognostic condition of which has been well established, or from other strata of an equivalent age."

M. Collomb says*—"The thesis I purpose sustaining is that of the existence of man prior to the existence of the old glaciers. In my view, man existed at the commencement of the quaternary period, and was the contemporary of the *elephas primigenius*, the *rhinoceros tichorhinus*, the *ursus spelæus*, etc., and many other extinct species, which are only found in the deposits immediately succeeding the tertiary series.

"To arrive at these conclusions, it must be first admitted—

"1. That the quaternary deposits (of which the authors have given sections) have not been subsequently disturbed.

"2. That the objects of human industry found in them are unquestionably the works of the human hand, and that they have not been subsequently introduced in their natural positions.

"This being granted, let us see what passes in the basin of the Somme, where Boucher de Perthes has collected so many flint implements.

"The following is the section which I have examined, in company with M. Lartet, at Saint Acheul. Omitting details, I find the following:—

"1. Superior portion, lehm (loam, clay) or loess.

"2. Middle portion, beds of grey and red sand, with small beds of silex.

"3. Inferior portion, gravel, the greater portion of which is formed of rolled silex and chalk, containing flint implements.

"In the basin of the Seine the quaternary terrain is, according to D'Orbigny, formed,—

"1. Lehm and vegetable earth.

"2. Red diluvium, quartzose sand with gravel, and marl without any shells.

"3. Grey diluvium with granitic elements, beds of marl sand with lacustrine shells; gravel at the base containing the remains of elephants and the *rhinoceros*.

"It is in the inferior portion of the grey diluvium at Grenelle that M. Gosse found a flint hatchet, exactly resembling those I found at

* "On the Existence of Man prior to the Apparition of the Ancient Glaciers." Letter by Ed. Collomb to Alph. Tarre; *Bibliothèque Univ. de Genève*, tom. viii. 1860.

St. Acheul; he found there other objects fashioned by man amongst the bones of extinct mammals.

"In the department of the Yonne, in the grottoes of Arci, M. De Vibraye noted the following arrangement:—

"1. Superior part, argillaceous lehm.

"2. Middle part, sand and calcareous gravel, derived from the adjoining mountains.

"3. Inferior part, rolled gravel, originating from distant rocks, namely, from the Morvan.

"It is in this inferior bed that he found a fossil human jaw, with a head of the *Ursus spelæus*.

"In short, the sections of the quaternary terrain may (omitting local details) be condensed in three distinct strata.

"The superior, known by the name lehm or loess.

"The middle, of sand, gravel, etc., but little rolled, the origin of which is not from a great distance (red diluvium of Paris).

"The inferior, rolled gravel, origin more distant (grey diluvium of Paris).

"These sections being admitted, I shall now demonstrate that man made his appearance *prior* to the ancient glaciers. For this purpose we shall examine the quaternary deposits of the valley of the Rhine, and also those of a valley in the Vosges; we shall not find man there, but we institute some comparisons which, if they do not carry conviction, may throw much light upon the question.

"The quaternary terrain of the valley of the Rhine, from Basle to Mayence, is composed of three characteristic deposits, like the rest of France.

"Superior, lehm.

"Middle, gravel, derived from the Vosges on the left bank of the Rhine, the Black Forest on the right bank, and the Jura above the basin.

"Inferior, gravel exclusively composed of pebbles of Alpine origin.

"In the interior of a valley of the Vosges we have the following section (Diagram of section).

"1. Moraines, well characterised.

"2. Rolled gravel, without any striated pebbles.

"3. Granite, or transitive rock.

"The terrains present themselves in the plains and the mountains in the following manner (Section given):—

"1. Moraine in the mountain, lehm in the plain.

"2. Middle, rolled gravel of a local origin.

"3. Inferior, rolled gravel of Alpine origin.

"In the plain of Alsace the deposits are regularly stratified, not having experienced a posterior dislocation; it is not so perhaps in Switzerland, in the perimetre of the action of the Alps, where the torrential deposits, the cones of dejection, etc., have acted upon the surface of the soil, and have changed the regular order of superposition.

"Thus, in Alsace, the lehm or loess of the plain corresponds synchronously with the ancient moraines of the valleys of the Vosges.

"Accordingly it seems to me that the following parallel may be established.

In the north-east of France, lehm.

Middle deposits of sand and gravel, known by the name of red diluvium, (valley of the Somme, the Seine, the Marne).

Inferior deposit, gravel derived from a great distance, containing at the base flint implements and the bones of extinct animals.

In the valley of the Rhine, lehm and moraines in the mountains.

Middle deposit, gravel composed of materials not derived from a great distance; anterior to the ancient glaciers.

Inferior deposit, gravel, rolled stones, exclusively from the rocks of Alpine origin, prior to the ancient glacier.

"It results from this analogy that the remains of human industry in the valleys of the Somme, Seine, etc., correspond with the inferior diluvium of the valley of the Rhine, a deposit which is much anterior to the ancient glaciers of the Vosges, as it is separated from them by the middle diluvium of the Rhine, or the red diluvium of the valley of the Seine. Man has thus existed anterior to the ancient glaciers, and was the contemporary of the mammoth, etc., and other extinct animals, the remains of which are found associated with human implements. I have selected for comparison the ancient glaciers of the Vosges, as their relations with the dépôts of the plain of Alsace seem clear and decided. It may, perhaps, be premature to apply the same reasoning to the ancient glaciers of the Alps, since it is not proved that they have disappeared at the same time. They may have persisted for thousands of years after the fusion of those of the Vosges, they may also have originated thousands of years before those of the Vosges, on account of the orographic difference of the two regions.

M. Gaudin says:* "On the contemporaneous vegetation of primitive man, M. Collomb admits that man existed before the glacial period. M. Lartet sustains that the greater portion of the existing

* "On the Contemporaneous Vegetation of the Primitive Man." Letter by C. I. N. Gaudin to Professor Alph. de Candolle; *Bibliothèque Univ.*, vol. viii, 1860.

animal population of our continent has passed through all the phases of the quaternary period.

"On a *resumé* as regards the terrestrial fauna, we arrive at the following conclusions:

"1. Some genera of mammals are no longer found in Europe, (Elephant, rhinoceros, hyæna, etc.).

"2. Certain species are entirely extinct. (*Elephas primigenius*, *Rhinoceros tichorhinus*, *Ursus spelæus*, etc.)

"3. Other species have continued to live in their respective regions, or in neighbouring countries. (*Ursus Arctos*, *Bos Urus*, *Cervus Tarandus*, etc.)

"Have the geological and climatic causes which produced these changes equally modified the flora which existed at the period when the great mammals became extinct? In other words, were the forests frequented by the men who fashioned the flints in France, England, etc., composed of the same species of trees which constitute the actual vegetation?

"The examination of the fossil impressions collected by Marquis Strozzi in the travertines of Tuscany prove that considerable modifications have been produced in vegetation. We may say that the changes in the flora and the fauna are parallel.

"1. Certain genera of plants which flourished in Europe at the period of the huge mammals are no longer indigenous in this part of the world. Such are the genera *Thuja*, *Liquidambar*, and *Juglans*.

"2. Some species are entirely extinct (*Thuja saviana*, *Juglans paviaefolia* Gaud.)

"3. Others exist still in Europe, near the beds where they have been found.

"Struck by this parallelism, I have long suspected that the modifications in the fauna and flora were effected at the same epoch.

"Very recently Mr. Penzi, of Rome, found in the travertines of Tivoli and Monticelli human teeth associated with the remains of the hyæna and other mammals. He considers this bed as belonging to the second pleistocene period, in the rocks of which near Rome large pachydermata have been found.

"In conclusion, the deposits of the travertines and tufas, characterized by their containing the bones of the large mammals contemporary with man, contain also a vegetation somewhat differing from that of our present forests.

"Some genera which then inhabited Europe are no longer met with, and these are chiefly American types, or those of the Atlantic islands."

"Some genera have completely disappeared from the surface of the globe, whilst the major part have not ceased to inhabit the same stations, or have migrated to neighbouring countries. The fossil animals which contain some leaves, prove that the deposits are either anterior or contemporaneous with the glacial period.

"I arrive thus as regards the vegetable world at the same conclusions as Lartet with respect to the animal world.

"The major portion of the vegetable population of our continent has traversed all the phases of the quaternary period, and that man could thus have existed as well as the vegetable world of our continent."

M. Gosse presented to the Anthropological Society of Paris seventy-one worked flints of various shapes. First a magnificent hatchet resembling those found by M. Boucher de Perthes, at Abbeville, but much larger, being not less than nineteen centimetres in length. To obviate any objection as to the nature and age of the bed, M. Gosse requested M. Hébert, Professor of Geology, to accompany him in his explorations of the quarry of the Rue de Grenelle. Professor Hébert states, positively, that the hatchet was extracted from the bed called the *inferior diluvium*, the thickness of which is about four feet and a half, situated about fifteen feet beneath the surface of the soil. It is noteworthy that scarcely any flints were found in the superior bed. In the same stratum were found a large number fossil bones, according to M. Lartet, the remains of the *Elephas primigenius*, *Bos primigenius*, the fossil horse, and a large carnivorous animal resembling the cavern felis. There were also extracted about seventy knives, wedges, arrowheads, etc. Some of the hatchets were only partially worked. The natural shapes of the flints appear to have been taken advantage of. There are at present about twelve gravel pits in Paris and its environs where flint implements are found.

Mr. Prestwich, in writing to M. Boucher de Perthes, says :—"In writing to you a few days since, I forgot to state the opinion I have formed as regards the bed in which the flint hatchets are found.

"With regard to the workmanship of those you have shown to me, and which I have myself procured at Abbeville and Amiens, I have not the least doubt of their being worked by man.

"After having attentively examined the beds of Moulin Quignon, St. Gilles, Abbeville, Saint Acheul, and Amiens, I have the conviction that the opinion you advanced in 1847 in your work on Celtic and antediluvian antiquities, that these hatchets are situated in undisturbed ground associated with the bones of the large mammalia, is just and

well founded. With regard to the bed at Menchecourt, the fact appears to me not so certain; yet I can detect no error.

"Permit me to observe that before my voyage I entertained the strongest doubts on the subject of the beds, and I am very happy to have convinced myself by searching for the truth of so important a fact."

In another letter to M. Boucher, dated June 8th, 1859, Mr. Prestwich writes:—"Though I returned fully convinced that the flint hatchets were truly from the diluvium, still I desired to find one myself, and that in the presence of other members of the Geological Society of London. I accordingly left ten days ago, accompanied by my friends, Messrs. Godwin-Austen, J. W. Flower, and R. W. Mylne. We went to work early the following morning, and after having closely examined the quarry at St. Acheul, Mr. Flower discovered and detached with his own hands, at a depth of twenty feet, a beautiful hatchet well worked, of the length of about twenty-five centimeters. It was found in an ochreous seam, beneath the white gravel, whence I extracted another hatchet. Above the gravel was a layer of sand with fresh water and land shells, then brown clay, gravel, and brick-earth. All was in the best order and undisturbed. It was beyond a doubt virgin soil. This discovery removed all doubts from the minds of my friends; and I believe we are all agreed as to the truth of which you have been the first exponent, and which you have vindicated for the last ten years, and of which I am happy to have been a witness."

Mr. Prestwich gives the following description of the gravel-beds of St. Acheul, capping a low chalk hill, a mile south-east of the city of Amiens, about one hundred feet above the level of the Somme, and not commanded by any higher ground. The following is the succession of the beds in descending order.

1. Brown brick-earth (many old tombs and some coins), with irregular bed of flint-gravel. No organic remains. Average thickness, ten to fifteen feet.

2 a. Whitish marl and sand, with small chalk débris. Land and fresh-water shells (all of recent species) are common, and mammalian bones and teeth are occasionally found. Average thickness, two to eight feet.

2 b. Coarse subangular flint gravel, white with irregular ochreous and ferruginous seams, with tertiary flint pebbles, and small sandstone blocks. Remains of shells, as above, in patches of sand. Teeth and bones of the elephant, and of a species of horse, ox, and deer,—generally near base. This bed is further remarkable for containing worked flints. Average thickness, six to twelve feet.

Mr. Prestwich, in his paper read before the Royal Society, May

26th, 1859, abstaining from all theoretical speculation, confines himself simply to the corroboration of the facts:—

1. That the flint implements are the work of man.
2. That they were found in undisturbed ground.
3. That they are associated with the remains of extinct mammalia.
4. That the period was a late geological one, and anterior to the surface assuming its present outline, so far as some of its minor features are concerned.

Lord Wrottesley writes: *—"Another independent proof of the great age of the gravel on the banks of the Somme, is derived from the large deposit of peat, the oldest portion of which belongs to times far beyond those of tradition; yet distinguished geologists are of opinion the growth of all the vegetable matter, and even the original scooping out of the hollows, are events long posterior in date to the gravel with flint implements, nay, posterior even to the formation of the layers of loam with freshwater shells overlying the gravel."

Sir R. Murchison says: † "Whilst the geological geographer who visits the banks of the Somme, and sees such an assemblage of relics beneath great accumulations formed by water (as I have recently witnessed myself), he is compelled to infer, when such a phenomenon was brought about, the waters, which have now diminished to an ordinary and small river, had risen in great inundations to the height of one hundred feet and more above the present stream, and swept over the slopes of the chalk in which the primeval inhabitants were fashioning their rude flint instruments, and when, as I would suggest, they escaped to the adjacent hills, and saving themselves from the sweeping flood, left no traces of their bones in the silt, sand, and gravel."

Sir Charles Lyell says: ‡ "I am fully prepared to corroborate the conclusions which have been recently laid before the Royal Society by Mr. Prestwich, in regard to the age of the flint implements associated in undisturbed gravel, in the north of France, with the bones of elephants at Abbeville and Amiens. . . . I infer that a tribe of savages, to whom the use of iron was unknown, made a long sojourn in this region; and I am reminded of a large Indian mound, which I saw at St. Simon's island in Georgia—a mound ten acres in area, and having an average height of five feet, chiefly composed of cast away oyster shells, throughout which arrow heads, stone axes, and Indian pottery are dispersed. If the neighbouring river, the Alatomaha, or the sea

* Lord Wrottesley in his Address at the Oxford Meeting of the British Association, 1860.

† Sir R. Murchison in his Address to the Geographical and Ethnological Section of the British Association at Oxford, 1860.

‡ Sir Charles Lyell's Address at the British Association, at Aberdeen, 1859.

which is at hand, should invade, sweep away, and stratify the contents of this mound, it might produce a very analogous accumulation of human implements, unmixed, perhaps, with human bones. . . . Lastly, the disappearance of the elephant, rhinoceros, and other genera of quadrupeds, implies in like manner a vast lapse of ages, separating the era in which the fossil implements were framed, and that of the invasion of Gaul by the Romans."

Assuming, now, that the worked flint theory is established by such strong evidence, as to amount to demonstration, there arise two very interesting questions: first, if possible, to determine the period in which these implements were fashioned, and the race of men who fabricated them.

It is not easy to give anything like a satisfactory answer to these queries, for in our present state of knowledge we possess no data to infer from. This much seems certain, that the race who worked the drift flints must have lived at a very remote time, cycles of ages anterior to the so-called Celtic period. Sir Charles Lyell* observes on this point. "All the evidence now before us on these flint implements, and on the circumstances under which they were found, would indicate that the people who made them must have occupied this site before the Straits of Dover were excavated."

It remains for geologists approximatively to determine the period when that event occurred.

M. George Pouchet † visited Saint Acheul, August 25, 1859. The workmen promised to call him as soon as they could find a "*langue de chat*," or cat's tongue, the name given by the miners to the flint hatchets. A few hours had scarcely elapsed when M. Pouchet was called for, and shown one; he, however, immediately perceived that it was a deception, and that the flint had been fraudulently introduced into an artificial cavity. After five days he was called again. This time he saw a hatchet imbedded in the diluvium under such conditions that a mystification was out of the question. After removing the flint from the diluvium he found that it had been worked, and must have been worked at a period anterior to the formation of the bed above it. Besides the stone hatchet which M. Pouchet had extracted himself, he saw many which had been dug out before his arrival. Some of these were spurious, others were perfectly genuine. Pouchet indicates an important character to distinguish the latter. In the course of centuries infiltrations reached the diluvium, depositing a crust of carbonate of lime, of about one millimetre in thickness,

* Opening Address, Aberdeen, 1859.

† Bulletin de la Société de la Anthropologie, November 3rd, 1859, p. 44.

upon the inferior surface of the flints in this bed. This crust is seen upon all the genuine hatchets at Saint Acheul, and is absent in the spurious hatchets fabricated by the miners. Some few of the genuine hatchets have, moreover, a characteristic peculiarity, that upon the surface, not covered by a calcareous deposit, dendritic impressions are seen, attesting the high, the great antiquity of the section.

Thus, continues M. Pouchet, the bed called diluvium contains, at Amiens, Abbeville, and in other spots of the basin of the Somme, objects worked by the hand of man, at a period long anterior to that usually assigned to man's apparition upon the earth. It has been pretended that the bed was not a real diluvium, but must have been formed since the commencement of the actual period. The fact, however, that in the same bed containing the hatchets, bones and teeth of the elephant, etc., have been found, proves, at any rate, that man inhabited the north of France simultaneously with the elephant. No human bones, it is true, have as yet been found. The remains of elephants have been, on account of their large dimensions, collected by the miners, while they carelessly cast aside the smaller bones. It is not known whether the diluvium of Saint Acheul does not contain human bones. M. Pouchet is convinced they will yet be found. This would complete the evidence, but is not absolutely requisite, as the existence of man is sufficiently attested by his works.

M. G. St. Hilaire said: I am not going to treat of the question of the "fossil man," but I believe that the question will soon be answered in the affirmative. There are already a sufficient number of facts which would be considered as conclusive, were the question confined to any other animal. Human bones have certainly been found in such positions, and with such characters, that no one would have thought to deny their being real fossils if they had belonged to the elephant or ox. But as the question related to man, and was an opposition to an idea accredited in science, many have tortured themselves to find sufficient reasons for rejecting them; and various hypotheses, some the most improbable, have to explain the intrusion of human bones in fossiliferous caverns and strata.*

As to the race who fabricated the flints, all opinions are simply the wildest conjectures; some think that the Iberians, who have been supplanted and nearly destroyed by the invading Celts, were the fabricators, whilst others attribute the implements to an extinct primitive race who are supposed to have lived long before the diluvial beds were formed—an inferior race, the relics of which, found by Professor Spring, in Belgium, he describes as follows.

* Société d'Anthropologie.

Cranium very small absolutely; very small also when compared with the large development of the jaws; forehead receding, temples flattened, nostrils large, dental arches very voluminous, supporting oblique teeth; facial angle about 70 degrees. The bones of the limbs short, indicating a stature not quite as high as that of the Lapps. And here it may be mentioned that while crania presenting the African type, have been found in various parts of the Continent, as in Baden; those found on the borders of the Danube and the Rhine, approach the shape of the crania of the Caribs.

The skulls found at Krems, in Austria, and at Lahr, in the valley of the Rhine, in the marl of the old alluvium, are also described as resembling those of the Caribs and Chilenos.

Surprising facts give rise to still more surprising theories; we are, then, by no means astonished that to explain the presence of these skulls, it has been broadly stated that the skulls belonged to natives of America, who had been brought to Europe and presented to the Spanish and German courts after the Conquest of the New World. How these skulls became mingled with the bones of the extinct animals is, however, left to the imagination.

Dr. Schmerling* found in several caverns on the banks of the Meuse, especially in the caverns of Engis and Engihoul, a quantity of human fossils, associated with the bones of extinct animals, and worked flints. Some of the crania approach the African type. He expresses his conviction that these crania belonged to individuals whose intellectual capacities were little developed. The colour, the degree of decomposition of the human bones is not in any way different from those of other animals; he concludes that the human remains have been buried in these caverns at the same epoch as the remains of extinct animals. What struck him most was the presence of flints of variable size, the forms of which were so regular that it is impossible to confound them with those found usually in the chalk. It cannot but be admitted that these flints were worked by the hand of man and may have served as arrows or knives. He attaches immense importance to the presence of these flints, for even if no human bones had been found in conditions favourable to the opinion that they belong to the antediluvian period the proof would have been furnished by the fashioned flint. He concludes, by expressing his conviction, that time will decide whether he is right to express himself in such a categorical manner.

De Saulcy, the celebrated French antiquary and traveller, has given a description of the remarkable brick-soil of Marsal, in Lorraine,

* *Recherches sur les Ossements Fossiles*, Liège, 1846.

which was once inhabited by a pre-Celtic race. The valley, *de la Seille*, appears to have been originally a large marsh, perfectly unfit for human habitation. An unknown tribe of immigrants seem, for some reasons, to have selected this enclosed valley for a settlement. They consequently softened the clay of the surrounding hills, shaped it into lumps, burned them, and sunk millions of these bricks into the marsh, until the soil became sufficiently firm, not merely to bear their habitations, but the present towns—Dieuze, Marsal, etc., which now occupy the locality. This subterraneous work is called the *briquetage de Marsal*. It has been calculated that 4000 workmen, labouring eight hours daily, would require twenty-five years merely to prepare the bricks for burning. How long it took that primitive people to perform the task, is not easy to say.

Primitive Inhabitants of the North of Europe.—The supposition of pre-Celtic populations of Europe gains daily more ground. Professor Nilsson, of Lund, is of opinion that the southern parts of Sweden were formerly connected with Denmark and Germany. As vegetation increased, graminivorous animals came from the south; these were followed by carnivora, and finally, by man, who was contemporary with the primeval ox (*Bos primigenius*), and the cave bear. He adduces, as a proof, that they possess in Lund, a skeleton of the primitive ox pierced by an arrow, and another of a bear found under a gravel deposit, along with stone and bone implements, for hunting and fishing.

The skulls of this primitive race are short, and present the brachycephalic form of Retzius. The parietal tubers are prominent, and the occiput broad and flattened. This race seems to have been succeeded by another with a cranium of a more lengthened oval form, and a prominent and narrow occiput (Dolichocephalic of Retzius). The third race, with a longer cranium than that of the second, and marked by greater prominence at the sides, is, by Nilsson, considered to have been of Celtic origin, who have introduced the use of bronze. Finally, there came the true Swea, introducing weapons of iron, from which the present Scandinavians are descended. The settlement of this race occurred sometime in the sixth century.

The skull, which was found in 1857, in the gorge of the Neanderthal, between Düsseldorf and Elberfeld, has excited much attention amongst anatomists. No satisfactory proof of its geological antiquity has been afforded us, as it was only found in a cave about sixty feet above the stream of the Düssel, with a fissure partially filled with mud and stones, extending from the cave to the upper surface of the country, and through which the skeleton was probably washed. The loam in

which it was found, on the base of the cave, was five feet thick. The cranium exhibits many remarkable analogies to that of the chimpanzee, and has been stated by Professor Huxley to be the most ape-like skull he ever beheld. According to Professor Huxley, it resembles those of the apes, not only in the prodigious development of the superciliary prominences and the forward extension of the orbits, but still more in the depressed form of the brain-case, in the straightness of "the squamosal suture, and in the complete retreat of the occiput forward and upward, from the superior occipital ridges." The capacity of the skull was equal to the mean deduced from the comparison of the highest and the lowest human skulls. Professor Huxley, calling attention to the amount of variation between the skulls of the Australian race, warns cautious reasoners not rashly to affirm that the Neanderthal and Engis skulls were necessarily of distinct races. At the same time, he does not affirm that the Engis and Neanderthal skulls belong to the Australian race, or that the ancient skulls belong to one and the same race.

Professor Waitz, of Marburg, has in his latest work,* the following observations in relation to the antiquity of man.

"The exact period of man's appearance on the globe cannot be determined, but that it must be very remote from the adopted historical human period is for many reasons all but certain."

"Geology may, perhaps, furnish us some data. Thus, the age of the coal formation is by some computed to lie between five and nine millions of years. This calculation by no means appears to be exaggerated. Lyell, on the other hand, has calculated that the formation of the valley of the Niagara, which is much more recent than the diluvial deposits, required at least 35,000 years for its formation.

"Now, though it may be admitted that it has not as yet been proved that the age of man reaches much beyond the diluvial formation, there is still less reason to believe that he appeared later, inasmuch as no general change of the surface of the earth has since taken place, and as all the essential conditions for man's existence were then present. It seems, therefore, that we are justified to assume the age of man to be between the extreme limits of 35,000 and 9,000,000 years."

"It must be acknowledged, that the Professor, by thus soaring into infinite time far beyond our ken, takes rather the safe side of the question. At any rate, he seems merely to say that there is presumptive geological evidence that humanity is not younger than 35,000 years.

Primitive Inhabitants of the British Isles.—The ancient inhabitants of Britain seem to have been closely connected with those of Scandin-

* *Anthropologie der Naturvölker*, 1860.

avia. Dr. Wilde* thinks that there is sufficient evidence to believe that Ireland has at different and remote periods been inhabited by at least two if not three distinct races, the first of which was characterised by a short and the second by an elongated form of skull, corresponding in character and succession to the Aborigines of Scandinavia. Dr. Daniel Wilson, in his work,† is of opinion that the most ancient of the extinct pre-celtic races of Scotland were men with boat-shaped kumbecephalic skulls, the second race of Nilsson. These lived in the stone period. The short-heads lived after them; both were destroyed or displaced by the Celts in the bronze period; and, in their turn, gave way to the Norwegians, who introduced iron.

Intelligence of Primitive Races.—That the mere rudeness of workmanship in the implements left us by the antehistoric or aboriginal peoples, does not necessarily lead to the inference that they were physically and morally inferior to succeeding races, must be admitted, for it may be doubted, that supposing a number of the present intelligent audience were suddenly cast away upon some desert island, deprived of the least use of metal or of the means to procure it, whether they could, by mere percussion, and friction, manufacture objects either more perfect, or more adapted to the purpose intended than the rude implements of the antehistoric race. As, therefore, we cannot judge of them by their works, we must search for other indications of their supposed mental capacities.

It is generally admitted that the mental superiority of man depends on the development and structure of his brain, and that the manifestation of intellect and the capacity for improvement is closely connected with the cerebral structure. It is also mostly allowed that examination of the interior of the skull gives a fair index of the size and shape of the brain.

Hence, our chief anthropologists have adopted the particular shape of the cranium as the great mark of distinction between the different races of man.

Premature as the inference may be, still if we are to judge of the smallness of the skull, the development of the jaws, and other abnormalities of the crania, found mingled with fossil-bones and flint implements, the conclusion is not altogether unfounded that the original races were inferior to the succeeding immigrants, and also that the primitive race is now extinct in Europe, and has shared the fate of the gigantic animals with which it was contemporaneous.

* *Ethnology of the Ancient Irish.*

+ *Pre-Celtic Annals of Scotland.*

ON THE RELATIONS OF MAN TO THE INFERIOR ANIMALS.*

PROFESSOR HUXLEY has recently published a small volume of essays which seem destined to create no little sensation amongst the British public. Whatever, however, may be its present popularity, it is not a work like Darwin's *Origin of Species*, born to a somewhat enduring fame. Professor Huxley has lost a grand chance of now producing a book which would be for a quarter of a century connected with his name; but instead of writing a serious and painstaking work he has published three very incomplete essays. We are sorry for Professor Huxley's fame that he should have done this; because the time has, perhaps, now come when a great deal of the evidence on this subject could be brought together. However, the work is published, and we must now give our readers some account of its contents. The first chapter is on the natural history of the man-like apes, chiefly taken from Dr. Savage and Mr. Wallace. We then have a note, with a well-known woodcut from Pigafetta, respecting African cannibalism in the sixteenth century. We have only to observe that this is most unnecessarily introduced at this place. Then comes the second, and most important chapter in the book, on the relation of man to the lower animals.

We shall let Professor Huxley, as far as possible, speak for himself. He thus introduces this subject.

"The question of questions for mankind—the problem which underlies all others, and is more deeply interesting than any other—is the ascertainment of the place which Man occupies in nature and of his relations to the universe of things. Whence our race has come; what are the limits of our power over nature, and of nature's power over us; to what goal we are tending; are the problems which present themselves anew and with undiminished interest to every man born into the world. Most of us, shrinking from the difficulties and dangers which beset the seeker after original answers to these riddles, are contented to ignore them altogether, or to smother the investigating spirit under the featherbed of respected and respectable tradition. But, in every age, one or two restless spirits, blessed with that constructive genius, which can only build on a secure foundation, or cursed with the mere spirit of scepticism, are unable to follow in the well-worn and comfortable track of their forefathers and contem-

* *Man's Place in Nature*, by T. H. Huxley, 1863.

poraries, and unmindful of thorns and stumbling-blocks, strike out into paths of their own. The sceptics end in the infidelity which asserts the problem to be insoluble, or in the atheism which denies the existence of any orderly progress and governance of things: the men of genius propound solutions which grow into systems of Theology or of Philosophy, or veiled in musical language which suggests more than it asserts, take the shape of the Poetry of an epoch.

"Each such answer to the great question, invariably asserted by the followers of its propounder, if not by himself, to be complete and final, remains in high authority and esteem, it may be for one century, or it may be for twenty: but, as invariably, Time proves each reply to have been a mere approximation to the truth—tolerable chiefly on account of the ignorance of those by whom it was accepted, and wholly intolerable when tested by the larger knowledge of their successors.

"In a well-worn metaphor, a parallel is drawn between the life of man and the metamorphosis of the caterpillar into the butterfly; but the comparison may be more just as well as more novel, if for its former term we take the mental progress of the race. History shows that the human mind, fed by constant accessions of knowledge, periodically grows too large for its theoretical coverings, and bursts them asunder to appear in new habiliments, as the feeding and growing grub, at intervals, casts its too narrow skin and assumes another, itself but temporary. Truly the imago state of Man seems to be terribly distant, but every moult is a step gained, and of such there have been many.

"Since the revival of learning, whereby the Western races of Europe were enabled to enter upon that progress towards true knowledge, which was commenced by the philosophers of Greece, but was almost arrested in subsequent long ages of intellectual stagnation, or, at most, gyration, the human larva has been feeding vigorously, and moulting in proportion. A skin of some dimension was cast in the sixteenth century, and another towards the end of the eighteenth, while, within the last fifty years, the extraordinary growth of every department of physical science has spread among us mental food of so nutritious and stimulating a character that a new ecdysis seems imminent. But this is a process not unusually accompanied by many throes and some sickness and debility, or, it may be, by graver disturbances; so that every good citizen must feel bound to facilitate the process, and even if he have nothing but a scalpel to work withal, to ease the cracking integument to the best of his ability."

After touching on the development of the lower vertebrate animals, "one turns with impatience to inquire what results are yielded by the study of the development of man. Is he something apart?"

Professor Huxley continues.

"It is quite certain that the Ape which most nearly approaches man, in the totality of its organization, is either the Chimpanzee or the Gorilla; and as it makes no practical difference, for the purposes of

my present argument, which is selected for comparison, on the one hand, with Man, and on the other hand, with the rest of the Primates, I shall select the latter (so far as its organization is known)—as a brute now so celebrated in prose and verse, that all must have heard of him, and have formed some conception of his appearance. I shall take up as many of the most important points of difference between man and this remarkable creature, as the space at my disposal will allow me to discuss, and the necessities of the argument demand; and I shall inquire into the value and magnitude of these differences, when placed side by side with those which separate the Gorilla from other animals of the same order.

“In the general proportions of the body and limbs there is a remarkable difference between the Gorilla and Man, which at once strikes the eye. The Gorilla's brain-case is smaller, its trunk larger, its lower limbs shorter, its upper limbs longer in proportion than those of Man.

“I find that the vertebral column of a full grown Gorilla, in the Museum of the Royal College of Surgeons, measures 27 inches along its anterior curvature, from the upper edge of the atlas, or first vertebra of the neck, to the lower extremity of the sacrum; that the arm, without the hand, is $31\frac{1}{2}$ inches long; that the leg, without the foot, is $26\frac{1}{2}$ inches long; that the hand is $9\frac{1}{4}$ inches long; the foot $11\frac{3}{4}$ inches long.

“In other words, taking the length of the spinal column as 100, the arm equals 115, the leg 96, the hand 36, and the foot 41.

“In the skeleton of a male Bosjesman, in the same collection, the proportions, by the same measurement, to the spinal column, taken as 100, are—the arm 78, the leg 110, the hand 26, and the foot 32. In a woman of the same race the arm is 83, and the leg 120, the hand and foot remaining the same. In a European skeleton I find the arm to be 80, the leg 117, the hand 26, and the foot 35.

“Thus the leg is not so different as it looks at first sight, in its proportions to the spine in the Gorilla and in the Man—being very slightly shorter than the spine in the former, and between 1-10th and 1-5th longer than the spine in the latter. The foot is longer and the hand much longer in the Gorilla; but the great difference is caused by the arms, which are very much longer than the spine in the Gorilla, very much shorter than the spine in Man.

“The question now arises how are the other apes related to the Gorilla in these respects—taking the length of the spine, measured in the same way, at 100. In an adult Chimpanzee, the arm is only 96, the leg 90, the hand 43, the foot 39—so that the hand and the leg depart more from the human proportion and the arm less, while the foot is about the same as in the Gorilla.

“In the Orang, the arms are very much longer than in the Gorilla (122), while the legs are shorter (88); the foot is longer than the hand (52 and 48), and both are much longer in proportion to the spine.

“In the other man-like Apes again, the Gibbons, these proportions are still further altered; the length of the arms being to that of the spinal column as 19 to 11; while the legs are also a third longer than

the spinal column, so as to be longer than in Man, instead of shorter. The hand is half as long as the spinal column, and the foot, shorter than the hand, is about 5-11ths of the length of the spinal column.

"Thus *Hylobates* is as much longer in the arms than the Gorilla, as the Gorilla is longer in the arms than Man; while, on the other hand, it is as much longer in the legs than the Man, as the Man is longer in the legs than the Gorilla, so that it contains within itself the extremest deviations from the average length of both pairs of limbs.

"The Mandrill presents a middle condition, the arms and legs being nearly equal in length, and both being shorter than the spinal column; while hand and foot have nearly the same proportions to one another and to the spine, as in man.

"In the Spider monkey, (*Ateles*) the leg is longer than the spine, and the arm than the leg; and, finally, in that remarkable Lemurine form, the Indri, (*Lichanotus*) the leg is about as long as the spinal column, while the arm is not more than 11-18ths of its length; the hand having rather less and the foot rather more, than one-third the length of the spinal column.

"These examples might be greatly multiplied, but they suffice to show that, in whatever proportion of its limbs the Gorilla differs from Man, the other Apes depart still more widely from the Gorilla and that, consequently, such differences of proportion can have no ordinal value."

After touching on the difference of human crania, the author observes:

"Thus, even in the important matter of cranial capacity, Men differ more widely from one another than they do from the Apes; while the lowest Apes differ as much, in proportion, from the highest, as the latter does from Man. The last proposition is still better illustrated by the study of the modifications which other parts of the cranium undergo in the Simian series."

A comparative examination is then made of the dental characters, the hand, and the foot of man and apes. When speaking of the brain of man, the author observes:

"When the gravest errors respecting points so easily settled as this question respecting the posterior lobes, can be authoritatively propounded, it is no wonder that matters of observation, of no very complex character, but still requiring a certain amount of care, should have fared worse. Any one who cannot see the posterior lobe in an ape's brain is not likely to give a very valuable opinion respecting the posterior cornu or the hippocampus minor. If a man cannot see a church, it is preposterous to take his opinion about its altar-piece or painted window—so that I do not feel bound to enter upon any discussion of these points, but content myself with assuring the reader that the posterior cornu and the hippocampus minor, have now been seen—usually, at least as well developed as in man, and often better—not only in the Chimpanzee, the Orang, and the Gibbon, but in all

the genera of the old world baboons and monkeys, and in most of the new world forms, including the Marmosets.

"In fact, all the abundant and trustworthy evidence (consisting of the results of careful investigations directed to the determination of these very questions, by skilled anatomists), which we now possess, leads to the conviction that, so far from the posterior lobe, the posterior cornu, and the hippocampus minor, being structures peculiar to and characteristic of man, as they have been over and over again asserted to be, even after the publication of the clearest demonstration of the reverse, it is precisely these structures which are the most marked cerebral characters common to man with the apes. They are among the most distinctly Simian peculiarities which the human organism exhibits."

Again, we read.

"So far as cerebral structure goes, therefore, it is clear that Man differs less from the Chimpanzee or the Orang, than these do even from the Monkeys, and that the difference between the brains of the Chimpanzee and of Man is almost insignificant, when compared with that between the Chimpanzee brain and that of a Lemur.

"It must not be overlooked, however, that there is a very striking difference in absolute mass and weight between the lowest human brain and that of the highest ape—a difference which is all the more remarkable when we recollect that a full grown Gorilla is probably pretty nearly twice as heavy as a Bosjesman, or as many an European woman. It may be doubted whether a healthy human adult brain ever weighed less than thirty-one or -two ounces, or that the heaviest Gorilla brain has exceeded twenty ounces.

"This is a very noteworthy circumstance, and doubtless will one day help to furnish an explanation of the great gulf which intervenes between the lowest man and the highest ape in intellectual power; but it has little systematic value, for the simple reason that, as may be concluded from what has already been said respecting cranial capacity, the difference in weight of brain between the highest and the lowest men is far greater, both relatively and absolutely, than that between the lowest man and the highest ape."

On this subject, Professor Huxley makes the following note, which will afford a subject for future discussion.

"I say *help* to furnish: for I by no means believe that it was any original difference of cerebral quality, or quantity, which caused that divergence between the human and the pithecoïd stirpes, which has ended in the present enormous gulf between them. It is no doubt perfectly true, in a certain sense, that all difference of function is a result of difference of structure; or, in other words, of difference in the combination of the primary molecular forces of living substance; and, starting from this undeniable axiom, objectors occasionally, and with much seeming plausibility, argue that the vast intellectual chasm between the Ape and Man implies a corresponding structural chasm in the organs of the intellectual functions; so that, it is said, the non-

discovery of such vast differences proves, not that they are absent, but that Science is incompetent to detect them. A very little consideration, however, will, I think, show the fallacy of this reasoning. Its validity hangs upon the assumption, that intellectual power depends altogether on the brain—whereas the brain is only one condition out of many on which intellectual manifestations depend; the others being, chiefly, the organs of the senses and the motor apparatuses, especially those which are concerned in prehension and in the production of articulate speech.

“A man born dumb, notwithstanding his great cerebral mass and his inheritance of strong intellectual instincts, would be capable of few higher intellectual manifestations than an Orang or a Chimpanzee, if he were confined to the society of dumb associates. And yet there might not be the slightest discernible difference between his brain and that of a highly intelligent and cultivated person. The dumbness might be the result of a defective structure of the mouth, or of the tongue, or a mere defective innervation of these parts; or it might result from congenital deafness, caused by some minute defect of the internal ear, which only a careful anatomist could discover.

“The argument, that because there is an immense difference between a Man’s intelligence and an Ape’s, therefore, there must be an equally immense difference between their brains, appears to me to be about as well based as the reasoning by which one should endeavour to prove that, because there is a ‘great gulf’ between a watch that keeps accurate time and another that will not go at all, there is therefore a great structural hiatus between the two watches. A hair in the balance-wheel, a little rust on a pinion, a bend in a tooth of the escapement, a something so slight that only the practised eye of the watchmaker can discover it, may be the source of all the difference.

“And believing, as I do, with Cuvier, that the possession of articulate speech is the grand distinctive character of man (whether it be absolutely peculiar to him or not), I find it very easy to comprehend, that some equally inconspicuous structural difference may have been the primary cause of the immeasurable and practically infinite divergence of the Human and the Simian Stirps.”

Professor Huxley says, on the origin of species—

“I adopt Mr. Darwin’s hypothesis, therefore, subject to the production of proof that physiological species may be produced by selective breeding; just as a physical philosopher may accept the undulatory theory of light, subject to the proof of the existence of the hypothetical ether; or as the chemist adopts the atomic theory, subject to the proof of the existence of atoms; and for exactly the same reasons, namely, that it has an immense amount of *prima facie* probability: that it is the only means at present within reach of reducing the chaos of observed facts to order; and lastly, that it is the most powerful instrument of investigation which has been presented to naturalists since the invention of the natural system of classification, and the commencement of the systematic study of embryology.”

The following note appears at p. 109.

"It is so rare a pleasure for me to find Professor Owen's opinions in entire accordance with my own, that I cannot forbear from quoting a paragraph which appeared in his essay 'On the Characters, etc., of the Class Mammalia,' in the *Journal of the Proceedings of the Linnean Society of London*, for 1857, but is unaccountably omitted in the 'Reade Lecture,' delivered before the University of Cambridge two years later, which is otherwise nearly a reprint of the paper in question. Professor Owen writes:

"Not being able to appreciate or conceive of the distinction between the psychical phenomena of a Chimpanzee and of a Bosjesman or of an Aztec, with arrested brain growth, as being of a nature so essential as to preclude a comparison between them, or as being other than a difference of degree, I cannot shut my eyes to the significance of that all-pervading similitude of structure—every tooth, every bone, strictly homologous—which makes the determination of the difference between *Homo* and *Pithecus* the anatomist's difficulty."

"Surely it is a little singular, that the 'anatomist,' who finds it 'difficult' to 'determine the difference' between *Homo* and *Pithecus*, should yet range them, on anatomical grounds, in distinct sub-classes."

This essay is concluded in the following words.

"But desiring, as I do, to reach the wider circle of the intelligent public, it would be unworthy cowardice were I to ignore the repugnance with which the majority of my readers are likely to meet the conclusions to which the most careful and conscientious study I have been able to give to this matter has led me.

"On all sides I shall hear the cry—'We are men and women, not a mere better sort of apes, a little longer in the leg, more compact in the foot, and bigger in brain than your brutal Chimpanzees and Gorillas. The power of knowledge—the conscience of good and evil—the pitiful tenderness of human affections, raise us out of all real fellowship with the brutes, however closely they may seem to approximate us.'"

"To this I can only reply that the exclamation would be most just and would have my own entire sympathy, if it were only relevant. But it is not I who seek to base Man's dignity upon his great toe, or insinuate that we are lost if an Ape has a hippocampus minor. On the contrary, I have done my best to sweep away this vanity. I have endeavoured to show that no absolute structural line of demarcation, wider than that between the animals which immediately succeed us in the scale, can be drawn between the animal world and ourselves; and I may add the expression of my belief that the attempt to draw a psychical distinction is equally futile, and that even the highest faculties of feeling and of intellect begin to germinate in lower forms of life. At the same time, no one is more strongly convinced than I am of the vastness of the gulf between civilized man and the brutes; or is more certain that whether *from* them or not, he is assuredly not *of* them. No one is less disposed to think lightly of the present

dignity, or despairingly of the future hopes, of the only consciously intelligent denizen of this world.

"We are indeed told by those who assume the authority in these matters, that the two sets of opinions are incompatible, and that the belief in unity of the origin of man and brutes involves the brutalization and degradation of the former? But is this really so? Could not a sensible child confute, by obvious arguments, the shallow rhetoricians who would force this conclusion upon us? Is it, indeed, true, that the poet, or the philosopher, or the artist whose genius is the glory of his age, is degraded from his high estate by the undoubted historical probability, not to say certainty, that he is the direct descendant of some naked and bestial savage, whose intelligence was just sufficient to make him a little more cunning than the fox, and by so much more dangerous than the tiger? Or is he bound to howl and grovel on all fours because of the wholly unquestionable fact, that he was once an egg, which no ordinary power of discrimination could distinguish from that of a dog? Or is the philanthropist or the saint to give up his endeavours to lead a noble life, because the simplest study of man's nature reveals, at its foundations, all the selfish passions and fierce appetites of the merest quadruped? Is mother-love vile because a hen shows it, or fidelity base because dogs possess it?"

Here follows "A succinct History of the Controversy respecting the Cerebral Structure of Man and the Apes." The statement Professor Owen made in 1857, that "the posterior development is so marked, that anatomists have assigned to that part the character of a third lobe; *it is peculiar to the genus homo, and equally peculiar is the posterior horn of the lateral ventricle and the 'hippocampus minor' which characterize the hind lobe of each hemisphere,*" is shown to be at variance with the opinion expressed by most other anatomists. Professor Huxley denies all three assertions, and concludes with the following statement.

"For the credit of my calling I should be glad to be, hereafter, for ever silent upon it. But, unfortunately, this is a matter upon which, after all that has occurred, no mistake or confusion of terms is possible—and in affirming that the posterior lobe, the posterior cornu, and the hippocampus minor exist in certain Apes, I am stating either that which is true, or that which I must know to be false. The question has thus become one of personal veracity. For myself, I will accept no other issue than this, grave as it is, to the present controversy."

We will not enter here into the propriety of inserting these remarks, because we are hardly able to enter into the feelings of the author. At first sight, they appear wanting in good taste; but we are inclined to believe that the author is justified in what he has said. It has been affirmed that this is a personal quarrel, but whatever may be its cause, there can be no doubt it is a most melancholy dispute.

Surely passion has enough fields for exhibition without being introduced into scientific discussion. If we believed this was a personal question, we should do all we could to expose the originator. But it is a matter of fact, opinion, and meaning of words. We hope that the Anthropological Society will appoint an independent (?) committee to report on the real facts of the case, and do their best to put a stop to this unfortunate dispute. But let these quarrels be a warning to all young men. Let them all know that there must be the same honesty in scientific discussions as in any other affairs of life. The scientific man cannot serve two masters. Nor is science in any way advanced by such attempts. On the contrary, a false statement of facts may retard the progress of science for years. What time has not been wasted respecting this dispute! Professor Owen is charged with stating that which he knows to be false. No doubt this is a serious charge: and were it possible for Professor Huxley to demonstrate its truth, we should neither attempt to justify or extenuate it. We take no part either on one side or the other in this dispute; but are bound to give our opinion that at the present time the evidence is chiefly on the side of Professor Huxley respecting the question of facts, unless Professor Owen can show that the meaning of his words has been misinterpreted.

An interesting chapter follows "On some Fossil Remains of Man," principally relating to the Engis and Neanderthal skulls, taken chiefly from Schmerling and Schaaffhausen. This chapter throws very little light on man's place in nature, and there is nothing in these skulls which may not now be found amongst existing savage races.

Professor Huxley makes the following very sensible remark respecting the present state of craniometry in this country.

"Until human crania have been largely worked out in a manner similar to that here suggested—until it shall be an opprobrium to an ethnological collection to possess a single skull which is not bisected longitudinally—until the angles and measurements here mentioned, together with a number of others of which I cannot speak in this place, are determined, and tabulated with reference to the basicranial axis as unity, for large numbers of skulls of the different races of Mankind, I do not think we shall have any very safe basis for that ethnological craniology which aspires to give the anatomical characters of the crania of the different Races of Mankind."

The author is not content with making these observations, but must go on to make the following dangerous generalization.

"At present I believe that the general outlines of what may be safely said upon that subject may be summed up in a very few words.

Draw a line on a globe from the Gold Coast in Western Africa to the steppes of Tartary. At the southern and western end of that line there live the most dolichocephalic, prognathous, curly-haired, dark-skinned of men—the true Negroes. At the northern and eastern end of the same line there live the most brachycephalic, orthognathous, straight-haired, yellow-skinned of men—the Tartars and Calmucks. The two ends of this imaginary line are indeed, so to speak, ethnological antipodes. A line drawn at right angles, or nearly so, to this polar line through Europe and Southern Asia to Hindostan, would give us a sort of equator, around which round-headed, oval-headed, and oblong-headed, prognathous and orthognathous, fair and dark races, but none possessing the excessively marked characters of Calmuck or Negro—group themselves.

"It is worthy of notice that the regions of the antipodal races are antipodal in climate, the greatest contrast the world affords, perhaps, being that between the damp, hot, steaming, alluvial coast plains of the West Coast of Africa and the arid, elevated steppes and plateaux of Central Asia, bitterly cold in winter, and as far from the sea as any part of the world can be.

"From Central Asia eastward to the Pacific Islands and subcontinents on the one hand, and to America on the other, brachycephaly and orthognathism gradually diminish, and are replaced by dolichocephaly and prognathism, less, however, on the American Continent (throughout the whole length of which a rounded type of skull prevails largely, but not exclusively) than in the Pacific region, where, at length, on the Australian Continent and in the adjacent islands, the oblong skull, the projecting jaws, and the dark skin reappear; with so much departure, in other respects, from the Negro type, that ethnologists assign to these people the special title of 'Negritoes.'"

Professor Huxley concludes the work by asking three questions, which time alone can answer.

"Where, then, must we look for primæval Man? Was the oldest *Homo sapiens* pliocene or miocene, or yet more ancient? In still older strata do the fossilized bones of an Ape more anthropoid, or a Man more pithecoïd, than any yet known, await the researches of some unborn paleontologist?"

Such, then, are specimens of the contents of a book which is destined to exercise no small amount of influence on the popular mind. It is not every man who is both able and willing to write on such a subject in such a way that the public shall be both interested and enlightened. Perhaps, however, the day is not come for a scientific work on such a subject. Therefore, the book is very properly called "*evidence*" as to man's place in nature, and, as such, it is a most valuable compilation. There is much, however, omitted which might have been introduced. This will all come in good time. Like all Professor Huxley's writings, it is clear in style, and decided

in expression. We have not dwelt on the most important point, the *arguments* from the facts adduced; but these will be ample food for discussion at some future day. Professor Huxley shares the weakness of his opponents in wishing to make some rigid distinction between man and animals. The other day, at Cambridge, he spoke of the "mental and moral gulf;" now he believes with Cuvier that the distinction is "articulate speech." We fear that Professor Huxley will have to yield this too as easily—if, indeed, not more easily—than his opponents will have to give up the structural difference. Making the distinction to be "articulate speech," is a sort of "refuge for the destitute,"—a bone thrown to a savage dog.

Professor Huxley seems to have had his conscience pricked when he wrote, "the possession of articulate speech is the grand distinctive character of man," for he adds in parenthesis, "*whether it be absolutely peculiar to man or not.*" We should like to know what is the difference between the "distinctive" character and the "grand distinctive" character? and how articulate speech can be a *distinctive* character at all, if it is not absolutely peculiar to man?

Would it not be better to assert at once that "written language" is the "grand distinctive character"? The only misfortune for such an hypothesis is the fact that some races of man have no written language. We have no hesitation in asserting that Professor Owen's "posterior third lobe," "posterior cornu," and "hippocampus minor," are as "grand distinctive characters" of man as Professor Huxley's "articulate speech." We would advise Professor Huxley to be cautious not to say anything more about the "grand distinctive character," because there really is no such thing: no amount of difference in degree ever amounting to the same thing as a difference in kind.

ETHNOLOGY AND PHRENOLOGY.*

THE natural history of man has, of late years, excited a more than usual interest, which has drawn numerous inquirers into the field of investigation, who, stimulated with vivid enthusiasm, are prosecuting observation with unwearied zeal, and daily adding to our stock of facts in this important and elevated department of science. No question can be clearer than that man's physical, moral, and intellectual nature is the loftiest and most important subject on which human intellect can be exercised, next to Deity. On our knowledge of this great point depends everything excellent in our laws, government, and social institutions; and, from our ignorance of it, proceed all errors and defects in them. Every advancement in this science, therefore, increases our power of promoting social good, and of remedying social evil. The world is full of wrong and evil, in reality, because man's nature is but little understood, and his history but imperfectly known; much of what is written, and called history, being nothing else than gossip and fable occasionally garnished with florid phrases and pompous eulogies.

The science of man, then, is but at its rudimentary stage, and no great social improvement can be expected till it has made further progress. Race is a term which is found at present in every mouth. No term is more frequently employed by the public speaker, journalist, or historian; but, unhappily, none more frequently abused. Indeed, at the very root of the inquiry, the question occurs, what is man? Is he of one species, or of several? Or does mankind consist of several permanent varieties individually modified by climate, diet, education, and other influences, but never radically altered; one variety never being converted into the other by any known causes; each remaining the same in essential characteristics for thousands of years? Or are all varieties of the human race to be accounted for by the influence of climate, laws, institutions, and education?

These are most important questions; for, according as the one or the other is true, must the laws and institutions, by which mankind are governed, be constituted, if their prosperity and happiness be the object sought. If mankind be one race, the varieties of which are

* *Ethnology and Phrenology as an Aid to the Historian.* By J. W. Jackson. London: Trübner & Co., 60, Paternoster Row. Edinburgh: MacLachlan & Stewart.

the result of circumstances, it is perfectly evident that there is but one perfect system for the government and social improvement of all nations, and that those which have not come up to this system can be brought to it by enlightenment and training; but if they consist of several races radically distinct, it is sufficiently certain that the prosperity and advancement of each depend on political and social institutions peculiarly adapted to its essential character.

The latter question, that men consist of several distinct races, may be said to be almost inductively established. When this, therefore, is the case, it is altogether absurd any longer to suppose that all these races are to be successfully ruled and developed by similar political and social institutions; for it is clear that in order that a government may be successful with one race, it must be suited to its peculiar character, and when suitable to this character, it is unsuitable to all others which are different from it. The object, then, of every person who would wish to enlighten himself on this interesting branch of knowledge, or who would wish to extend and advance the science for the purpose of rendering it practically useful, is to prosecute the study of the peculiar character of each individual race in order to ascertain its distinctive features, its moral tendencies, and its intellectual capacity.

Although numerous, interesting, and important facts have been collected in connection with this elevated department of knowledge, which throw much light upon it, and which form a basis for curious, pleasing, and entertaining speculation; yet these are by far too few to enable profound scientific thinkers to arrive at satisfactory conclusions, or to construct theories that could be accepted as reliable science by the practical world.

At present numerous inquirers are in the field, and observations on the mental and physical characteristics of different races are carried on with wonderful vigour. Facts are being collected in all quarters of the globe; while the support which these are supposed to give to the various theories, in the meantime afloat in the scientific world, is contested by the opposite theorists with vehemence and pertinacity. Still, it may be said that fully too great stress is laid on facts and observations; while speculation, to any extent beyond these, is, upon the whole, very much discouraged, and, usually, treated with disdain. No doubt, wild and reckless theorising does much damage to the true progress of science, by diverting the mind from the proper channel of truth, and leading it into that of whim and reverie. However, it is not theory, or hypothesis, that does so much injury; but, rather, the

laying down of these as perfectly established science. Speculation does not hurt science but when it is of a dogmatic character.

If we review the history of any department of science, which is, at present, brought to a high degree of excellence, we shall find that, in its advancement to this condition, it has been helped on fully as much by the imagination, as by the understanding. How many of its important truths does chemistry owe to alchemy! And astronomy owes not a little of her wonderful progress to the pursuit of judicial astrology. We laugh at Descartes' vortices; but these lent their aid to that glorious theory which was conceived and propounded by Copernicus, and verified by Newton.

The philosophical Emerson remarks of English works on science, "that all imagination is driven out of them," and "that they are as dry and uninteresting as treatises on conveyancing." This is rather severe, but not without some truth. Our works on science, doubtless, adhere too rigidly to facts; our scientific men strongly discountenance all play of fancy; and this is most assuredly detrimental to the advancement of knowledge. That it may prevent the multiplication of error is pretty certain; but better have a rich soil though it should be troubled with rank weeds, than a poor one even were it entirely free from them. This rigid exclusiveness with respect to theory has, probably, driven many minds into the region of fiction, that would have been fully more usefully employed in extending the bounds of philosophy by bold and original inquiry.

In no department of intellectual pursuit is the exercise of imagination so important, or so much required, as in those sciences which are yet in their infancy; such as ethnology, archæology, philology, and mythonomy. These are all new sciences whose striking and wonderful facts have excited a most vivid interest in the philosophical world. They are all most intimately connected with man's welfare and highest interests. They are, in fact, so many sciences converging towards one point,—man,—so many sciences which, when they have been sufficiently developed in the course of time, will, ultimately, become one. It is highly important, therefore, that the cultivators of these separate, but kindred departments of scientific pursuit should hold this common point of union in view, and mutually cooperate. By doing so their respective labours will, unquestionably, lead to much greater results than can possibly be attained by their individual and independent action. The development of ethnology, undoubtedly, depends on that of the forementioned kindred sciences, and any step of advancement these make will, also, to a certainty, favour its progress.

Before we had hardly any facts to form a basis for this science, voluminous works were written setting down its laws as if it had been as well established as geometry or arithmetic. These books could hardly be said to display much imaginative power, unless prejudice, partiality, dogmatism, and vituperation, can be called the product of imagination. These works, however, have been read, believed, and received as science by great numbers; and, in fact, are not, yet, without a considerable hold on the minds of many superior and enlightened people. This may account for the antipathy which studious ethnologists have to any speculation beyond a rigid induction from ascertained facts. But although some theorists are shallow, prejudiced, strongly whimsical, and weakly imaginative, it does not follow that all are so. On the contrary, an able theory, propounded by a man of clear intellect and vivid imagination, is sure to be eminently suggestive; and, in this respect, cannot but be highly useful to the ardent and assiduous observer. Such a theory supplies the practical ethnologist with important hints calculated to be of great service to him in his endeavours to unravel many of the intricacies which observation presents to him.

It may give him light on many obscure points, and help him to see his way clearly where he saw but dimly before. If he does not adopt the theory entirely, it may lead him, and, also, aid him, to form a theory of his own, more perhaps, in accordance with the result of his inquiries and observations. Again, it may fire his flagging enthusiasm, stimulate him to further exertion; and, although there is no royal road to ethnology any more than to geometry, it may smooth the rugged path a little, soothe and refresh the weary traveller, and so 'send him on his way rejoicing.'

A good theoretical book, therefore, on a department of science that is but imperfectly known, is by no means to be disapproved of; but, rather, to be hailed as highly serviceable to the prosecution of inquiry. On this account, it is exceedingly pleasing to fall in with a work of this class,—a work written in a charming style, brimful of poetic allusions, and largely abounding in important and instructive suggestions. The work is entitled "*Ethnology and Phrenology*." The author is Mr. J. W. Jackson, a writer well known already to the scientific world by his able articles in the "*Future*," as well as by several interesting and important works on scientific subjects. Mr. Jackson is one of those who impart a peculiar fascination to whatever they write, and the present work has all the power of exciting curiosity and enchaining attention, which well written novels possess. When

the book is taken up it can hardly be laid aside till the whole is read through, and when read through the charm is by no means dissolved. Such a train of delightful meditation has been aroused in the mind; such a wide *coup d'œil* has been presented to it; such emotions have been awakened, that the reader feels a kind of regret in laying the book aside; nay, feels inclined to re-read it, and, in doing so, experiences more pleasure, and finds that the intellectual delights of the work are by no means exhausted. The truth is, it may be read over several times with increased pleasure and benefit.

Phrenology, as a scientific theory, has, for a long time, been before the world, and it may be said, with certainty, that no philosophical theory has ever been more severely tested. It has all along met with most stringent opposition, and its advocates may be said to have fairly answered, in a reasonable manner, most of the objections made to it. The fundamental principles of the science may, therefore, be said to be fairly established; although it is but yet in its infancy. It would, consequently, be extremely injudicious in the ethnologist to deny himself any aid which he might derive from it; in fact, were he to do so he would be denying himself the use of one of the most powerful instruments for throwing light on the most obscure portions of the science. Mr. Jackson has, accordingly, employed phrenology to great advantage in his interesting work, and, by its valuable aid, has given very clear and rational explanations of intricate and profound ethnological questions. The book is remarkable for a wonderful power of concentration; of very few books can *multum in parvo* be more truly predicated. The arrangement is beautifully methodical, and all the nations of past and modern times are presented to our view with such vividness as would do credit to the pencil of an artist.

Here we have a fine ethnological portraiture of Caucasian, Mongol, and Negro; of Copt, Jew, Egyptian, and Syrian; of Greek, Roman, Celt, Teuton, and Slavonian. The characteristics of these, both physical and mental, are nicely discriminated and delineated; their respective missions are suggested; and their ethnic relations to one another are pointed out. Although such terms as Caucasian, Negro, and Mongol, are now being disputed, and in a manner thrown aside, from its being shown that they do not truly designate single races; still the terms apply very well to groups of races that are more closely allied to one another; and, on this account, Mr. Jackson is fully justified in having adhered to them. The Negro is, doubtless, a distinct race from the Caffre, the Chinese from the Fin, and the Celt

from the Teuton; but the Caffre is, certainly, nearer the Negro than he is to the Chinese or Celt. Indeed, our present recognised races may yet be found out to be groups of very closely allied ones, as nebulae are discovered to be clusters of stars by Lord Rosse's telescope.

Mr. Jackson is in favour of the theory that places man in a natural kingdom of his own, and there is very great reason to think that his intellectual and moral nature point him out as an order of being fully distinct from the animal creation. On this point Mr. Jackson (p. 15), remarks;—"In all the earlier works on natural history, man was simply regarded as the *genus homo*, and, in fact, was generally described as a distinct species. This error, for such it undoubtedly was, arose from an overweening estimate of the importance of the ruder portions of the corporeal structure, to the neglect of the nervous system and its higher product, as manifested in mental capacity. Resemblances and diversities in the locomotive, respiratory, and alimentary functions were forcibly dwelt upon, while the immense difference phrenologically observable in the cerebral was practically ignored. This was, perhaps, almost unavoidable previous to the discoveries of Gall; and was, moreover, in strict accordance with the grossly materialistic spirit of the eighteenth century, which loved to dethrone the superior and enthrone the inferior. Gradually, however, have these mistakes in arrangement been corrected. Cuvier placed man in a distinct order—the Bimana; and, as we have said, Professor Owen accords him his rightful supremacy in the Archencephala, on the strength of his cerebral development alone—a most important movement in the right direction. But we may still ask, is this sufficient? Does man differ from the ape and the lion only as the latter differ from the sloth and the bat? We may go still further, and ask, does he differ from the quadrumanous and quadrupedal mammalia only as the latter differ from the reptilia? Is it sufficient to make him simply a distinct class? If we regard only his anatomical proclivities of structure, as at present taught authoritatively in the schools, we shall, of course, say yes. But if we contemplate him morally and phrenologically, we shall answer no. The difference is greater than can be signified by mere diversity of class. When we see the entire animal kingdom living on the plane of unassisted nature unclothed and, save in a few exceptional instances, unhoused, both herbivora and carnivora taking their food quite unprepared; when we see them the creatures of instinct and impulse, utterly devoid of moral sentiment, and, consequently, of conscious responsibility, altogether incapable of rising to the level of abstract thought, and, therefore, on

the plane of simple fact and limited personal experience, ignorant of first principles, and wholly deficient in imagination, in very truth, merely organic and sentient machines; when we compare such beings with man, who has subdued the earth to his purposes; who has covered the land with his cities, and bridged the sea with his ships; who lives under an abiding sense of moral responsibility, and in the resplendent hope of an endless immortality; who ascends as by a law of his higher nature from fact to principle, and has thus grandly interpreted the sublimer verities of that universe amidst which he is physically so insignificant a dweller, and who, despite his magnificent realizations in the religious, social, literary, and artistic spheres, has, nevertheless, an ideal of unattainable excellence within, at once the guide and the prophecy of never ending progress hereafter, both individually and collectively; when we compare these two radically distinct, and we might say contrasted, orders of being, it becomes at once obvious that we must separate man from the inferior creatures by something wider than the demarcation of a class, we must boldly advance to the grander lines of a kingdom, and fearlessly assert that man is separated from the animals, as they from the vegetables, and the latter from the minerals. This is at present rank scientific heterodoxy. We know it, and are quite contented to wait till it becomes respectable scientific orthodoxy."

Here we have the grand distinctive characteristics of man pointed out with trenchant discrimination, and with graphic vividness of delineation. However difficult it may be to discover in man's anatomical structure the gulf between himself and the animal creation, there are very strong probabilities in favour of the opinion that this discovery is but a question of time; that further inquiries will discover something in the human structure separating him as fully from the animal creation as his mental nature does. Mr. Jackson points to phrenology as a theory fully capable of accounting for the difference; and the reader of this able and interesting book will find his views, on this important question, beautifully illustrated in the comparison of man with the gorilla.

The confounding of races, nations, and peoples, has greatly retarded the progress of ethnology, darkened the path of the science, and obstructed it with innumerable errors. It is very much to be regretted that the names of nations and peoples have been adopted for those of races which formed principal elements in them. On this topic Mr. Jackson makes the following judicious observations:—

"Do we yet really know what is meant by a race or a nation; or

have we settled in what sense the word unity is to be used? Politically speaking, a nation is one thing—ethnically, it is another; and we are almost unavoidably prone to the vicious habit of confounding the two, without due regard to their radical distinction. It is the same with languages, which are by no means identical, in the sphere over which they prevail, with that of the race amidst whom they may have originated, and of whom alone, therefore, they can be profoundly characteristic. Philology is no doubt a most serviceable handmaid to Ethnology, but to be so must be kept in due subordination."

We err when we talk of Irish and Scottish highlanders as Celts, in contradistinction to English and Scottish lowlanders. There are portions of the Scottish highlands much more Teutonic than some portions of the lowlands; several of the Hebrides, and a large part of the north-east and east of Ireland are more Teutonic than the west and south-west of England. The Scottish highlanders are an example of a people speaking a Celtic language, who have the same national sympathies, and very much of the same national character, with the Scottish lowlanders, who speak a Teutonic one. Though speaking a kindred language with the English, these cannot be called the same people, any more than they can be called the same nation; since they have widely different traditions and superstitions, and a widely different popular poetry, which breathes antipathy, and strong national animosity to their kindred neighbouring people. The Scottish highlanders may be called the same people with the Gaelic speaking Irish, as both speak the same language, though differing somewhat in dialect, and have a common stock of tales, traditions, and superstitions. Both have the same common ancient poetry, about which Scotland and Ireland have waged such a furious pen-war; each country claiming those ancient ballads as its own exclusive property. The highlander is united to the Irishman by language and traditions; to the lowlander by political institutions and historical associations. When a considerable portion of mankind speak the same language, and have common traditions, they may be considered the same people; when for a long period governed by the same institutions, they form one nation, but they may be composed of several distinct races. There is a distinct character belonging respectively to race, nation, and people. The English have a common national character, which is very conspicuous; but the racial character of the Cornishman differs widely from that of the people of Suffolk and Norfolk. In the former, Celtic peculiarities predominate; in the latter, Teutonic ones. The following passage from that entertaining

and instructive book, *Seaside Studies*, by George Henry Lewes, will throw some light upon this point:—

“The Scillians are a remarkably healthy, good-looking race; the black eyes and long eyelashes of the children making cre’s parental fibres tingle with mysterious pleasure, as the ruddy rascals pause in their sport to look at the stranger. Their manners are gentle and dignified; civil, not servile. Not an approach to rudeness or coarseness have I seen anywhere.”

This clear and vivid description of the Scilly islanders would equally apply to the highland inhabitants of Uist and Barra; and any one who has studied the features and manners of the peasantry of the east of England, knows it does not apply to *them*.

In his *Universal History*, Voltaire remarks that there are but three agents by which civilization is advanced; religion, commerce, and conquest. How the latter effects this purpose is beautifully explained by Mr. Jackson, in the following passage, by the theory of race:—

“Superior races must colonize inferior to give them nerve; and inferior races must occasionally conquer superior, to restore them the bone and muscle, the strength and stature wasted amidst the wearing excitement of a previous era of civilization and progress. The Gothic invasion of the decadent Roman empire was simply an ethnic phenomenon in strictest accordance with the principles here enunciated.”

So the destruction of an effete civilization by robust and vigorous barbarians, is but a preparatory process for the attainment of one still greater and higher.

Mr. Jackson is somewhat inclined to doubt the metaphysical superiority of the Germans, of whom he speaks in the following terms:—

“Perhaps our estimate of German ability in metaphysics is rather exaggerated. We have overrated them, and underrated ourselves. Kant was started by Hume, as the latter was but Locke in his ultimates; while even the last very orthodox philosopher was only a Christianized edition of Hobbes adapted for general circulation.”

The doubt thrown out here modestly, may be pronounced a certainty. German metaphysicians are overrated, and very much so, because they make a great noise about the matter themselves. The Celts are as metaphysical, if not more so, than the Germans; but, from their peculiar temperament, they are more desirous of being admired for other literary and scientific abilities. It is very remarkable that neither the French nor the Irish make any noise about their metaphysicians; yet, in this respect, they are not to be rivalled by any other nation. Descartes is at the head of modern philosophy; Malebranche and Pascal were among the most spiritual of thinkers. Berkeley’s acumen is hardly yet properly appreciated, and was totally

misunderstood by those who pretended to refute him. In the middle ages, the Irish students attending the universities in Spain, and other countries on the continent, were alike celebrated for their physical and metaphysical combative powers. Hume belonged to Fifeshire, a district in which "the names of places are without exception Celtic", and which was never conquered by the early Anglo-Saxons. "In Kirkaldy," says Dr. Beddoe, "I think the peculiarly Scotch features rather prevalent." This was the native town of the most distinguished of Scottish metaphysicians.

Scandinavia and Holland have hardly produced any metaphysicians. The German metaphysical talent seems to belong to the Central and Southern Germans; and it is remarkable that the Catti, who may be considered the true ancestors of the modern Germans, are pointed out by Tacitus from the rest for their forethought and reflection: "*Multum (ut inter Germanos) rationis ac solertiæ*"; while of the Chanci, the true Saxon, the modern Westphalian, who extends into Holland and Eastern Britain, he says: "*Populus inter Germanos nobilissimus quisque magnitudinem malit justitia tueri: sine cupiditate, sine impotentia.*" Thus Tacitus distinguishes three Teutonic races, who probably owed their common language, manners, and physical resemblance to Scandinavian conquest which took place previous to the time that the Cimbrians poured down in such formidable hordes upon Italy and Gaul. The democratic principle is preeminently Saxon. It was the Saxon mind that created the Hanse Towns, and that established the republic of Holland. The Scandinavian, though haughty in character, is strongly disposed to monarchy and aristocracy; the feudal monarchies of the middle ages were of Celto-Scandinavian origin. These were in time properly checked and modified by the rise of the Saxon in towns and burghs. A love of the grand and the sublime, a strong imagination, and a very strong inductive faculty, with but moderate deductive power, particularly distinguish the Scandinavian. In perceptive power he far rivals the other Teutonic races, while in that faculty called locality by phrenologists no other race equals him; hence his preeminence as a seaman, and his travelling propensities. The English and American mania for travelling is of Scandinavian origin. As an infantry soldier he is not to be surpassed, any more than as a seaman; but, when mixed with the Celt, he is the perfection of humanity both on sea and land. One of his greatest faults is egotism, combined with bombastic magniloquence. The writer of these lines walked into Exeter Hall, when on an excursion to see the Great Exhibition in 1851, for the purpose of hearing

some of the "humanitarian" speeches delivered there, and observed a gentleman of florid complexion and light sand coloured hair—in fact, of pure Scandinavian type—rising to deliver a speech on the evils of "law's delay" in chancery. The commencement of the speech was characteristic of the race:—"We, the most civilized people in the world." A few years ago, the American president complimented his countrymen as a "nation of sovereigns."

The Scandinavian mind is properly represented by Tycho Brahë, Linnæus, Swedenborg, and Thorwaldsen. Malte Brün, the prince of geographers, is also of this race; but they have no metaphysicians worthy of the name. As an astronomical observer, Tycho Brahë never had an equal; but, in endeavouring to give a theory of the universe, he totally failed. The Scandinavian mind is strongly marked in Newton, Milton, Byron, Scott, and Campbell. It is strongly perceptible in the eloquence of Burke and Chalmers. Never, by ancient or modern, was sea-life and sea-heroism described with such vigour, clearness, enthusiasm, and elevation, as by Campbell, Byron, and Scott. The *Corsair* is but an ancient Viking in an eastern dress.

These, then, are the several Teutonic races, all distinguished by peculiar prominent qualities, by whom the British Celts have been crossed, through conquest at various successive periods, so as in process of time to produce the present British or Anglo-Saxon race, which Mr. Jackson pronounces "a thoroughly baptized Celt", and which race he very clearly and correctly describes in the ensuing graphic terms:—

"The Anglo-Saxon seems to have inherited the strength without the weakness of those from whom he descends. In him the activity and impulsiveness of the Celt are so controlled by Teutonic self-command, as to eventuate only in sustained and well-directed energy; while Roman decision and firmness of purpose are united with an expansion of intellect and versatility of faculty, to which the specially endowed *dominos rerum* never approached. He has the massiveness of the Goth without his phlegm, and the enterprize of the Norseman without his ferocity. And what is somewhat remarkable, although now subjected during several centuries to what are usually considered the exhausting influences of civilization, he has preserved the robust qualities of his variously gifted predecessors, more effectually than their immediate and comparatively unmingled descendants in the older countries whence they emigrated into Britain."

We forbear to quote further from a book which every person, interested in the science of Man, should read. One pleasing trait of the author is his hopefulness. He entertains brilliant anticipations

of the future destiny of mankind; and, with prophetic scientific penetration into the future, points out the great, important, and beneficial results to which the proper interfusion of races tends. He sees the necessity of inferior races being ruled by superior ones, and looks out for a high civilization, even for the Negro in Africa, when he shall be mixed with races not too widely different from him in organization.

LYELL ON THE GEOLOGICAL EVIDENCE OF THE ANTIQUITY OF MAN.*

It has been long known that Sir Charles Lyell was engaged on a work treating of the antiquity of man. The name of Lyell has been deservedly held in great respect by geologists, and by the public at large, for the last thirty years. It was admitted on all sides that Sir Charles Lyell was the right man to undertake such a work. It was, besides, generally felt that a name which commanded influence with the public at large, ought to be put to the work which should collect and arrange the mass of facts that have gradually accumulated on this subject. In many quarters great expectations were roused that this work would be something original; but those who were acquainted with the literature on this subject knew that there was little more to be done than to give a fair summary of known facts. To find little original or new must be a great disappointment to very many. How far has the author succeeded in giving us, then, a fair compilation? In the first place, we must say that it is exceedingly creditable to Sir C. Lyell, that having written against the antiquity of man in his *Principles of Geology*, and having devoted a special chapter to the recent origin of man, that he should live to show the fallacy of his reasoning from 1832 to 1858. Sir C. Lyell is well acquainted with the art of compilation; but his present work is not equal to his former productions. Indeed, much of this work is not calculated to add to the reputation of the author; but the extreme caution which characterizes nearly every sentence will make it admired by all "sound geologists." The work in its totality is something frightful. Sir Charles is not content with giving the facts relating to the antiquity

* *The Geological Evidences on the Antiquity of Man, with Remarks on Theories of the Origin of Species and Variation.* By Sir Charles Lyell, F.R.S. Murray, 1863.

of man, but he has obtruded questions which have nothing to do with that subject. We think the plan of announcing a work on the *Geological Evidences of the Antiquity of Man*, and then introducing long chapters on the theories of the origin of species, to be most objectionable. But we have other complaints to make against this work, which we shall briefly touch on as we proceed. In making these objections, we would wish to state, *in limine*, that we entertain the highest respect for the author, and freely acknowledge that he has done good service to the cause of truth and science by the publication of his present work. We cordially sympathize with the spirit of the undertaking, and freely acknowledge that the author has made a very fair epitome of existing facts, and that his work, although studiously laboured, is still very readable. We are grateful for what the author has given us, but regret that it is not so complete and satisfactory as we believe it was in the power of Sir Charles to make it.

The work begins with a chapter on the Danish peat mounds and Swiss lake dwellings. We had thought that both these subjects should come under the exposition of the archæologist rather than the geologist. However this may be we are bound to confess that this chapter is far from being even a complete epitome on these subjects. Indeed, it is clear that Sir Charles is not at all at home in writing of archæological subjects. Many of the most important facts are entirely omitted, and there is a want of clearness of exposition which sufficiently shews that the author is not thoroughly versed in his subject. When the author understands his subject, he invariably writes clearly; and there are not a few passages in the work which deserve to be commended, both from the clearness with which they are narrated, as well as from the value of the facts themselves. In the account of the lake-habitations of Switzerland, we read:—

“Carbonized apples and pears of small size, such as still grow in the Swiss forests, stones of the wild plum, seeds of the raspberry and blackberry, and beech nuts, also occur in the mud, and hazel nuts in great plenty. Near Morges, on the Lake of Geneva, a settlement of the bronze period, no less than forty hatchets of that metal have been dredged up; and in many other localities the number and variety of weapons and utensils discovered, in a fine state of preservation, is truly astonishing. It is remarkable that as yet all the settlements of the bronze period are confined to Western and Central Switzerland. In the more eastern lakes, those of the stone period alone have as yet been discovered. The tools, ornaments, and pottery of the bronze period in Switzerland bear a close resemblance to those of corresponding age in Denmark, attesting the wide spread of a uniform civilization over Central Europe at that era. In some few of the aquatic

stations, as well as in tumuli and battle-fields in Switzerland, a mixture of bronze and iron implements and works of art have been observed, including coins and medals of bronze and silver, struck at Marseilles, and of Greek manufacture, belonging to the first and pre-roman division of the age of iron. In the settlements of the bronze era, the wooden piles are not so much decayed as are those of the stone period; the latter having wasted down quite to the level of the mud, whereas the piles of the bronze age (as in the Lake of Brienne, for example) still project above it. Professor Rüttimeyer of Basle, well known to palæontologists as the author of several important memoirs on fossil vertebrata, has recently published a scientific description of great interest of the animal remains dredged up at various stations, where they had been imbedded for ages in the mud in which the piles were driven. These bones bear the same relation to the primitive inhabitants of Switzerland and some of their immediate successors, as do the contents of the Danish 'refuse-heaps' to the ancient fishing and hunting tribes who lived on the shores of the Baltic."

We next have an account of the investigations of Mr. Leonard Horner respecting the age of pottery found in the Nile sediments. We are sorry to find that Sir Charles Lyell has thought it worth while to notice such absurdities. Because some burnt brick was found sixty feet deep, therefore it must be twelve thousand years old! At least Hekekyan Bey, an Armenian, vouches for the pottery being found at that depth, and no doubt correctly. To waste the money of the Royal Society, and to occupy the paper and print of the *Philosophical Transactions*, was bad enough, but to base a chronology on the evidence Mr. Horner adduced was preposterous. Well may Sir Charles Lyell observe:

"The experiments instituted by Mr. Horner, in the hope of obtaining an accurate chronometric scale for testing the age of a given thickness of Nile sediment, are not considered by eminent Egyptologists to have been satisfactory. The point sought to be determined was the exact amount of Nile mud which had accumulated in three thousand or more years, since the time when certain ancient monuments, such as the obelisk at Heliopolis, or the statue of King Rameses at Memphis, are supposed by some antiquaries to have been erected. Could we have obtained possession of such a measure, the rate of deposition might be judged of, approximately at least, whenever similar mud was observed in other places, or below the foundations of those same monuments. But the ancient Egyptians are known to have been in the habit of enclosing with embankments the areas on which they erected temples, statues, and obelisks, so as to exclude the waters of the Nile; and the point of time to be ascertained, in every case where we find a monument buried to a certain depth in mud, as at Memphis and Heliopolis, is the era when the city fell into such decay that the ancient embankments were neglected, and the river allowed to inundate the site of the temple, obe-

lisk, or statue. Even if we knew the date of the abandonment of such embankments, the enclosed areas would not afford a favourable opportunity for ascertaining the average rate of deposit on the alluvial plain; for Herodotus tells us that in his time those spots from which the Nile waters had been shut out for centuries appeared sunk, and could be looked down into from the surrounding grounds, which had been raised by the gradual accumulation over them of sediment annually thrown down. If the waters at length should break into such depressions, they must at first carry with them into the enclosure much mud washed from the steep surrounding banks, so that a greater quantity would be deposited in a few years than, perhaps, in as many centuries on the great plain outside the depressed area where no such disturbing causes intervened."

Speaking of the Mound builders of America, the author writes :

"It is clear that the Ohio mound builders had commercial intercourse with the natives of distant regions, for among the buried articles some are made of native copper from Lake Superior, and there are also found mica from the Alleghanies, sea shells from the Gulf of Mexico, and obsidian from the Mexican mountains. The extraordinary number of the mounds implies a long period, during which a settled agricultural population had made considerable progress in civilization, so as to require large temples for their religious rites, and extensive fortifications to protect them from their enemies. The mounds were almost all confined to fertile valleys or alluvial plains, and some at least are so ancient, that rivers have had time since their construction to encroach on the lower terraces which support them, and again to recede for the distance of nearly a mile, after having undermined and destroyed a part of the works."

There is an account of the Mounds of Santos in Brazil, the Delta of the Mississippi, and the Coral Reefs of Florida, which are all dismissed with three pages out of the 506 which the work contains. We then have ten pages on Recent Deposits of Seas and Lakes : and then Sir Charles begins to get at home, and writes on the upheaval since the human period of the central district of Scotland, of Cornwall, and Sweden and Norway. We next have an account of the bones of Man and extinct Mammalia in the Cavern of Bize, Engis, and Neanderthal. Professor Huxley then occupies eight pages with observations on the Human Skulls of Engis and Neanderthal. We then come to an account of the Post-pliocene Alluvium containing flint implements in the valley of the Somme. And here we think the author has hardly done justice to the accomplished M. Boucher de Perthes, who first discovered these implements, upwards of twenty years ago (in 1841), and who published a full and correct account of his discoveries sixteen years ago (in 1847). Sir Charles Lyell does not explain why he did not examine this evidence until more than ten years after the

publication of M. Boucher de Perthes' work. On this subject we should have been glad if Sir C. Lyell had been a little more explicit. All we read is "the scientific world had no faith in the statements that works of art, however rude, had been met with in undisturbed beds of such antiquity."

Now this explanation has been given before; but we think it to be a very lame excuse, and most unjust to M. Boucher de Perthes. It is not our business to discover what were the reasons for the non-acceptance of the conclusions which were given in this work; but they would not be difficult to guess. We say at once, that it is no little disgrace to the geologists of this country that they should have taken no notice of these discoveries until they had been proclaimed throughout the length and breadth of the then United States of America, and had been accepted by some of the best scientific men of that country.

Dr. William Usher of Mobile published in 1854 a most complete summary of all the facts relating to caverns, and also a full account, with illustrations, of M. Boucher de Perthes' discoveries, in the great national American work *The Types of Mankind*. Sir C. Lyell has not mentioned this paper: but the public are likely to learn far more from a perusal of it than from his own studied reserve.

In treating of the Brixham cave, we think that justice is hardly done to the care and labour which Mr. Pengelly and Dr. Falconer devoted to the excavations which were made here. The conclusion is thus given:—

"Upon the whole, the same conclusion which Dr. Schmerling came to, respecting the filling up of the caverns near Liège, seems applicable to the caves of Brixham."

For an exemplification of the working of the peculiar process of reasoning by which Sir Charles Lyell was able to examine the caves near Liège, as well as other caves, and then for thirty years write against their affording any evidence of Man's antiquity, and is now able to say that Dr. Schmerling gave the true reason forty years ago, we must refer to the works of the author.

We next have four chapters on the Post-pliocene Alluvium of France and England, with an account of the works of art that have been found in different caves in Europe. These chapters, although very diffuse, are still written with very great care, and are a good epitome of what is known on the subject. We then come to a chapter in which the human fossil found at Natchez on the Mississippi is discussed. Here we are glad to see that Sir Charles has given up his old style of argument respecting this fossil. Dr. Usher, ten years

ago, protested against the way in which the Natchez fossil was treated. We feel it just to quote an extract from his article.*

"One human pelvis, found near Natchez by Dr. Dickeson, is an undoubted fossil; yet we are told that ferruginous oxides act upon an os innominatum differently than upon bones of extinct genera lying in the same stratum, lest natural incidents might give to man in the valley of the Mississippi an antiquity altogether incompatible with received ideas: and Sir Charles Lyell accordingly suggests a speedy solution of the difficulty, by saying that a fossilized *pelvis* may have fallen from an old Indian grave near the summit of the cliff. Attempts have been made to throw doubt upon every discovery of human fossils in the same manner: and the greatest ingenuity is exhibited in adapting adequate solutions to the ever-varying dilemmas. In the case of the fossils brought from Brazil, a human skull was taken out of a sandstone rock now overgrown with lofty trees, Sir Charles Lyell had again recourse to his favourite Indian burying-ground; although this time it had to be sunk beneath the level of the sea, and become again upheaved to its present position. But, supposing all this to be true, what an antiquity must we assign to this Indian skull, when we remember the ancient trees above its grave, and reflect upon the fact that bones of numerous fossil quadrupeds, and, among others, of a horse (both found in the alluvial formation), must be of a more recent origin than the human remains."

On this subject Sir Charles now writes:—

"If I was right in calculating that the present delta of the Mississippi has required, as a minimum of time, more than 100,000 years for its growth, it would follow, if the claims of the Natchez man to have coexisted with the mastodon are admitted, that North America was peopled more than a thousand centuries ago by the human race. But, even were that true, we could not presume, reasoning from ascertained geological data, that the Natchez bone was anterior in date to the antique flint hatchets of St. Acheul." * * * * *

"Should future researches, therefore, confirm the opinion that the Natchez man coexisted with the mastodon, it would not enhance the value of the geological evidence in favour of man's antiquity, but merely render the delta of the Mississippi available as a chronometer, by which the lapse of post-pliocene time could be measured somewhat less vaguely than by any means of measuring which have as yet been discovered or rendered available in Europe."

Seven chapters follow, in which the following subjects are treated—Antiquity of Man relatively to the Glacial Period, and to the existing flora and fauna; Chronological Relations of the Glacial Period, and the earliest signs of man's appearance in Europe (two chapters); Extinct Glaciers of the Alps, and their chronological relation to the Human Period; Human Remains in the Loess, and their probable

* "Geology and Paleontology in connection with the Human Origins." *Types of Mankind*, page 344. 1854.

age; Post-glacial Dislocations and Foldings of Cretaceous and Drift Strata in the Island of Møen in Denmark; The Glacial Period in North America.

From these chapters we only make one extract; but we cannot help remarking that it was hardly necessary to have extended the subject of these chapters as the author has done. The following extract, we trust, is sound geology:—

“I cannot doubt that these large erratics of Upsala were brought into their present position during the recent period, not only because of their moderate elevation above the sea level, in a country where the land is now rising every century, but because I observed signs of a great oscillation of level which had taken place at Södertelje, south of Stockholm, (about forty-five miles distant from Upsala), after the country had been inhabited by man. I described, in the *Philosophical Transactions* for 1835, the section there laid open in digging a level in 1819, which showed that a subsidence followed by a re-elevation of land each movement, amounting to more than sixty feet, had occurred since the time when a rude hut had been built on the ancient shore. The wooden frame of the hut, with a ring of hearthstones on the floor, and much charcoal were found, and over them marine strata, more than sixty feet thick, containing the dwarf variety of *Mytilus edulis*, and other brackish-water shells of the Bothnian Gulf. Some vessels put together with wooden pegs, of anterior date to the use of metals, were also embedded in parts of the same marine formation, which has since been raised, so that the upper beds are more than sixty feet above the sea-level, *the hut being thus restored to about its original position relatively to the sea.*”

Chapter the nineteenth is a recapitulation of “the geological proofs of Man’s Antiquity.”

“The opinion entertained, generally, by classical writers of Greece and Rome, that man in the first stage of his existence was but just removed from the brutes, is faithfully expressed by Horace in his celebrated lines, which begin:

‘*Quum proveperunt primis animalia terris.*’—Sat. lib. i, 399.

The picture of transmutation given in these verses, however severe and contemptuous the strictures lavishly bestowed on it by Christian commentators, accord singularly with the train of thought which the modern doctrine of progressive development has encouraged. ‘When animals,’ he says, ‘first crept forth from the newly formed earth, a dumb and filthy herd, they fought for acorns and lurking places with their nails and fists, then with clubs, and at last with arms, which, taught by experience, they had forged. They then invented names for things, and words to express their thoughts, after which they began to desist from war, to fortify cities, and enact laws.’ They who in later times have embraced a similar theory, have been led to it by no deference to the opinions of their Pagan predecessors, but rather in spite of very strong prepossessions in favour of an opposite hypo-

thesis, namely, that of the superiority of their original progenitors, of whom they believe themselves to be the corrupt and degenerate descendants. So far as they are guided by paleontology, they arrive at this result by an independent course of reasoning; but they have been conducted partly to the same goal as the ancients, by ethnological considerations common to both, or by reflecting in what darkness the infancy of every nation is enveloped, and that true history and chronology are the creation, as it were, of yesterday."

Sir Charles Lyell must simply speak for himself when he talks of the "corrupt and degenerate descendants." The whole of this part of the extract is far from clear. This chapter ends with a reference to the late Sir G. C. Lewis's *Astronomy of the Ancient and Early Egyptian Dates*.

So far the work on the "Geological Evidence of the Antiquity of Man" is completed; the remainder of the book treats on theories of progression and development. That subject has nothing to do with the antiquity of man. It is true, however, that no theory of development can be true without an enormous antiquity; but any amount of antiquity for the appearance of man or his works does not give any support to the theory of progressive transmutation. In taking leave of this work we feel bound to confess that Sir Charles has done his best to write a work which should be for the advancement of truth and the benefit of science. The time, however, has not yet arrived when a exhaustive treatise, like Sir Charles Lyell's attempt, could be written. If Sir C. Lyell would compile a small work purely on the geological evidence of the antiquity of man, he would be really doing good service, as such a work is now much needed. The present work is indispensable to the geologist, but it is far too diffuse for the public generally. The book, as it stands, would be greatly improved if the archæological evidence were omitted, such as the ancient account of the lake habitations and mounds, and especially the chapters on the development theories. Sir Charles writes as though it were only within the last few years that we had any reason to believe in a great antiquity for man. Anthropologists, however, have long been convinced that the recent origin of man rested simply on negative evidence, and they always anticipated that time and researches would bring to light the remains of man with the extinct mammalia. All the conditions of man's existence were then in operation, and every branch of Anthropology indicated a very considerable antiquity for man's first appearance; and the following extract from Steffen's *Anthropologie*, published more than forty years ago, will show what was held by Anthropologists at that period, and we believe by nearly all the leading writers, not excepting Dr. Prichard, since that time.

"The question arises, has this vast catastrophe occurred before or after the creation of man? According to the opinion of our naturalists the inquiry is perfectly useless. They are all convinced that the revolution which destroyed the monstrous animals took place before man's advent, and they support their opinions by the circumstance that no anthropoliths (petrifications of man), are to be found. Recent discoveries have raised great doubts on this subject. There is one circumstance which must not be overlooked. Animals are more fettered by certain conditions, especially limited as they are to certain kinds of food. A beast of prey, though driven by hunger, cannot live on plants, nor will an elephant consume animal food. The sudden change of external conditions rendered the extinction of these animals imperative. Not so with man. Just as at present, he can live in every climate, and feed on animals or plants, so could he then. He had also the power of saving himself from destruction by ascending the hills. We must, therefore, not wonder if human bones are very rare. I take it to be a fact that the human race existed before the great catastrophe which destroyed a gigantic vegetation and monstrous mammals."

In conclusion, we have only again to express our high sense of the value of Sir Charles Lyell's book, and our pleasure that it has already reached a second edition.

WILSON'S PRE-HISTORIC MAN.*

Dr. WILSON is known by his *Pre-Historic Annals of Scotland*, published some years ago. He was a practised archæologist, familiar with the antiquities of Great Britain, before he accepted a professorship in University College, Toronto. A full acquaintance with a well-worked field in the Old World was, of course, a most useful introduction to the study of American Ethnology, and his previous experience gives him the power, often wanting among American antiquaries, of explaining and classing facts by reference to the archæology of other regions.

It is, however, most unfortunate that Dr. Wilson should have undertaken in his present work a task more fitted for the crowning labour of such a life as Humboldt's, than for the occupation of the leisure hours of an antiquary, whose solid basis of knowledge consists only in a familiarity with the archæology of Great Britain, and of that

* *Pre-Historic Man; Researches into the Origin of Civilization in the Old and the New World.* By Daniel Wilson, LL.D., Cambridge. London: Macmillan, 1862.

part of North America which lies above the tropics. As to Mexico, Central America, and South America, he mostly compiles from well-known authors, and though his observations are often highly amusing and instructive, they are not what so important a subject demands, the well-digested opinions of a student thoroughly acquainted with all that has been already done by workers in the same field.

The first volume contains (chapter viii) the best description we have met with of the ancient workings of the native copper veins of Lake Superior, drawn from personal investigation as well as books. Dr. Wilson demolishes the notion, so often entertained in America, that the old copper-workers had some other means of hardening tools of native copper than hammering them, and describes well the simple processes they must have employed by cracking the rock by fire, and getting the copper clear by beating with stone hammers. It is to be observed that he believes the greater copper-workings to have been done, not by the present race of Indians, but probably by the extinct race known as the Mound-Builders, who have left remains so remarkable for size, symmetry, and number, in the valleys of the Mississippi and its tributaries. These mound-builders Dr. Wilson discusses at length, drawing his information, of course, for the most part, from Squier and Davis, in vol. i of the *Smithsonian Contributions*, and attacking energetically the theory supported by some American antiquaries, as, for example, Schoolcraft, who thus sums up his opinion on this subject at the end of his great work: "The mound-builders were the ancestors of the existing Indian race. The theory of there having been prior races of superior civilization and arts, has no countenance from examinations made in his work" (Part III, p. 393). Dr. Wilson's view is exactly contrary to this, and we think the best of the argument is on his side. He dwells upon the importance of their earthworks used for defence and worship, so different from their mean representatives among the modern Indians; the accuracy of their squares and circles in works many acres in area; the curious correspondence of their dimensions in different parts of the country, which makes it likely, though not certain, that they had a unit of measurement; their remarkable sacrificial system; the extraordinary excellence of their characteristic pipe sculpture, etc.

When Dr. Wilson quits the beaten track of Squier and Davis, and strikes into a new path of his own, he gets, in one instance at least, upon what seems to us very unsafe ground. Certain copper bracelets occur in a mound, which Squier and Davis describe (p. 204-5) as "of uniform size and weight," and which "weigh four ounces each,"

and Dr. Wilson says that they "when perfect weigh exactly four ounces each. This becomes a proof to his mind that the mould-builders knew the art of weighing, which even the Aztecs did not possess. At least in vol. ii, p. 453, he sets down, on the strength of this, "standard weights," as known to the inhabitants of North America. The assumption seems to us to rest on no sure foundation, at least so far as Dr. Wilson gives the data. The bracelets appear to have belonged to one person, so that there is nothing very surprising in their being pretty nearly alike; but Dr. Wilson does not give the weight in grains, and the even quantity, four ounces, shows how rough the observation is. He may have formed his opinion upon more accurate evidence than this, but, if so, this evidence should have been given.

We find Dr. Wilson repeating the usual statement in describing the evidences of commerce with distant parts found in the mound-builders' tumuli; "objects formed from the mica of the Alleghanies, and the native copper of Lake Superior, mingling with others made of the obsidian of Mexico, or modelled from tropical fauna of the southern continent" (vol. i, p. 223). The latter important point is treated at p. 476, etc., but we think does not rest on sufficient evidence; and the same objection holds as to the "obsidian of Mexico," which might be supposed to prove intercourse, direct or indirect, between the mound-builders and the Mexicans. But obsidian is not only found but used by the natives for weapons, etc., in other places on the Continent, and why may not this obsidian have come from Northern California or Oregon?

The chapters in this work headed "The American Cranial Type" and "Artificial Cranial Distortion" are verbose, superficial, and unsatisfactory. It is difficult to give any intelligible account of the wilderness of undigested facts which are comprised in the hundred and twenty-five weary pages on the subject. Suffice it to say, that we have carefully examined Dr. Wilson's compilation, and fail to perceive either a single new fact, or a single old one placed in an intelligible and instructive form. Moreover, it is but too evident that the author has not taken care to render himself familiar with the best authorities on the subject. He adopts the careless and inaccurate observations of Mr. J. H. Blake, and gives a figure of a skull (p. 242) which he terms a "well proportioned symmetrical skull, unaltered by any artificial appliances." This skull appears to us merely an example of Foville's *tête annulaire*, and undoubtedly due to circular constriction behind the coronal suture. The manner in which the

logician's *suggestio falsi* is made use of by Dr. Wilson, to induce general readers to believe that the theory that the American aborigines are referable to two distinct cranial types—the brachy- and dolichocephalic—was arrived at by Mr. J. H. Blake as an original observation, we consider very much to be deplored. The theory was originated by Morton, but was left to be intelligibly propounded by Retzius. The whole subject of the distortion of Peruvian crania has been sufficiently ventilated of late years: and the supererogatory attention which Dr. Wilson has paid to the subject can, we think, only be attributable to an excess of leisure on his part, which is most unprofitably spent in the two chapters before us.

The chapters on the Mixture of Indian and White Blood are of great interest to the anthropologist. Dr. Wilson utterly repudiates the idea of the half-breeds being an example of the weakness and non-permanence of mixed races; and he gives an account of their physical and moral excellences, which the advocates of the opposite view of such races have to answer. It is true that these half-breeds are not likely to form a permanent race; but this arises, in Dr. Wilson's opinion, from no want of productiveness, but simply from their gradual absorption into the general population of the country. We do not go further into the discussion of Dr. Wilson's anthropological opinions, which we hope will be examined by special students.

We have complained of Dr. Wilson's discussing various important topics without a proper knowledge of existing materials. For instance, a dissertation on museums of Mexican antiquities (vol. ii, p. 94, etc.) contains no mention of the great Uhde collection, now at Berlin, the finest in the world except that of Mexico itself. A discussion of the mysterious question, "Who were the builders of the ruined cities of Central America?" ought to have contained at least some reference to the remarkable legends published by the Abbé Brasseur de Bourbourg; and it is of little use to argue at the present day about the origin and history of the Aztecs, without the aid of one of the very most important pieces of evidence we possess on this difficult subject, Professor Buschmann's researches on the traces of the Aztec language far up into the interior of North America.

We find with astonishment, a mention of "Letters" as known to the ancient inhabitants of Central America (vol. ii, p. 453). This must, we suppose, refer to the remarkable figures, often spoken of as "hieroglyphics", in the Central American sculptures. Any one who looks at the description of these sculptures in vol. ii, chap. xix, or studies the plates in Stephens for half an hour, may know as much as

Dr. Wilson or any one else knows about the matter, and will at least wonder at the power of imagination which has enabled him to lay it down that they are "hieroglyphic holophrasms" and "letters"!

Dr. Wilson is very unfortunate in his philology. He adopts the popular derivation of the name of the *manatí*, or cow-fish, from Spanish *mano*, a hand, as though meaning "the fish with hands", without stopping to inquire by what process of Spanish etymology *manatí* could be made from *mano*. The word is really a Carib one, and is given as *manattoüi* in Raymond Breton. He regards the word *kona*, which is said to mean "woman" in Greenlandish as well as in Old Norse, as "a clearly recognized trace" of the presence of the Norsemen in Greenland. Now, though Egede gives the word *kona* in his *Dictionary*, he marks it as not genuine Greenlandish; and, if it were genuine, it would not be safe to say, without further evidence, that it was anything more than an accidental coincidence.

"One swallow does not make a summer", is one of the fundamental principles of philology. Chapter iii of the first volume is on speech; and in it the author's exaggerated idea of the range of imitative words in language leads him into some very astonishing statements. If horses say *htor*, and cows *ehe*, and serpents *hoff*, we can only say that the popular idea of their voices is grossly wrong. A glance at Pictet's *Origines Indo-Européennes* would dispel Dr. Wilson's delusive idea that the name of the beaver has anything to do with any imitation of its voice; and there are other things in the chapter as objectionable as these.

While acknowledging the value of Dr. Wilson's personal observations, and the number of useful details which he has collected and arranged, it is necessary to say that he is by no means a guide to be followed blindfold, and that only those students who have the opportunity of sifting the good from the bad are likely to receive much benefit from his present work.

ETHNOGRAPHIC DESCRIPTION OF THE PEOPLES OF RUSSIA.*

By T. De PAULY.

Dedicated to the Emperor Alexander on the occasion of the Millenary Jubilee of the Russian Empire.

THIS is really a most magnificent work, and reflects the highest credit on Russian science and art, being illustrated by sixty-two coloured plates representing the types and costumes of all the peoples of the Russian Empire. M. Pauly, himself known as a patient and industrious investigator, has had the advantage of the assistance of Eckert, Ritter, Schott, Kœpper, Kounck, Brosset, etc. Ch. de Baer has furnished the introduction. The work is divided into five principal sections, namely, Indo-Europeans; Peoples of the Caucasus; Ouralo-Altaic Peoples; Peoples of Eastern Siberia; Peoples of Russian America. The sections are subdivided into chapters, each of which treats of a distinct nationality, with a description of its habits, history, organization, etc.

There is an appendix containing, (1) a plate representing the chief cranial types; (2) a statistical table founded on the last official documents; and (3) an ethnographic chromo-lithograph map.

The work has only one drawback, it is inaccessible from its price, which is not less than £35 sterling. Considering, however, that the designs have been furnished and executed by the most renowned artists, that the plates have been destroyed, and that only comparatively few copies have been printed; we do not think that the author will derive much advantage in a pecuniary point of view. It is rare, indeed, to see such a work attempted and successfully executed by the private resources of an individual.

We give an extract from Baer's introduction.

"Among the scientific works which distinguish the present epoch, none are more useful, and deserve to be received with more favour, than a new and complete description of the peoples of the Russian Empire. In our anthropological treatises we no longer restrict ourselves to carefully grouping the numerous varieties of man, but we attach the greatest importance to the diversity of the intellectual faculties of nations.

"A work which gives precise information on these interesting subjects, would both facilitate scientific research, and would be invaluable

* *Description Ethnographique des Peuples de la Russie*, par T. de Pauly. 1862. St. Petersburg.

to the government with regard to the administration of the respective countries."

The preceding remarks show that M. de Pauly has filled up a gap in the domain of science.

The area of the Russian Empire, in 1859, is estimated by Pauly at 400,000 geographical square miles, with a population of seventy-four millions. Of this number, fifty-five millions, that is more than three-fourths of the whole population, belong to the Slavonian race—the most numerous of the three principal European races, amounting to above 80,000,000 of souls. We find, thus, that of the various elements composing the population of the Russian Empire, the Slavonian greatly predominates, and *there only* maintains its sovereignty, not being, as elsewhere, subject to other nationalities. We shall, probably, have occasion to refer to this great work in a future number.

ON THE COMMIXTURE OF THE RACES OF MAN IN WESTERN AND CENTRAL ASIA.*

By JOHN CRAWFURD, Esq., F.R.S.,

PRESIDENT OF THE ETHNOLOGICAL SOCIETY; HONORARY FELLOW OF THE
ANTHROPOLOGICAL SOCIETY OF LONDON.

AMONG the races that have played the most conspicuous part in history are the Jews, including under this name all the people of Palestine and Phœnicia. I imagine they are now everywhere more or less a mixed people. It is sufficient distinction for a small people, with a narrow territory, that they were the first to engage in foreign maritime commerce—that they founded Carthage, the rival of Rome; and that from among them sprang the two forms of religion which now prevail with half the inhabitants of the globe and all the more civilized.

The entire region occupied by the Hebrew race is not above a fourth part larger than the Principality of Wales. It is a country of mountains, rocks, deserts, but with some well-watered, and therefore fertile, plains and valleys. Near ten degrees beyond the tropic, Palestine in climate resembles the southern countries of Europe, and its natural products correspond, for it was a land of wheat and barley, of the vine and the olive. The race was, in energy and enterprise, far more European than Asiatic. Hemmed in by deserts and the

* Extracted from a paper read before the Ethnological Society, March 17th, 1863.

Mediterranean, they seem to have made the most of their narrow bounds. Far beyond the reach of history, they had cultivated corn, had domesticated the most useful of the lower animals, were in possession of the useful and precious metals, and had invented phonetic writing, while their dull neighbours the Egyptians never went beyond clumsy symbols.

Had so energetic a race as the Jewish possessed an extensive territory, they would, no doubt, have become great and powerful conquerors. As it was, their obstinate valour did not hinder them from being subdued by every powerful people that attempted their conquest; so that for at least thirty ages they have been more or less intermixed with races both Asiatic and European.

At a very early age a colony of Jews settled in Egypt; and that they were not very grievously oppressed there, seems attested by the rapid increase which took place in their numbers. It was this colony which, escaping from bondage, returned to their parent country by the Arabian Desert, and subdued the cognate tribes that occupied it. We cannot suppose that in their long residence in Egypt, and during their tedious passage through the Desert, they did not commingle with Egyptians and Arabs, although usually solicitous to preserve the purity of their own blood. The man of genius who rescued them from Egyptian thralldom—led them through the Desert, and gave them laws and institutions, was himself married first to a Midianite—that is, it may be presumed, to an Arabian—and then to an Ethiopian—that is, to a Nubian—whose blackness was as unchangeable as “the spots of the leopard.” On coming into the promised land, it was, moreover, lawful for them, after destroying the males, to intermarry with the captive females without distinction of race.

In process of time the Assyrians conquered Palestine; in the first instance carrying off ten of the tribes into captivity, and then the remaining two. By this we are certainly not to understand that the Assyrians carried off the entire nation of the Jews. They would naturally carry off a selection only of ordinary prisoners, and all the leading men, to obviate revolt; for we cannot suppose even Oriental conquerors so insensate as to destroy the value of their conquest by reducing it to the condition of an unpeopled desert. The select few of two of the tribes were eventually permitted to return to their own country, but the banished of the ten tribes never had such permission, and being absorbed by the more numerous people among whom they were planted, they have, as an inevitable consequence, wholly disappeared as Jews, and hence the ten lost tribes will never be found.

Yet under the name of Samaritans, they were probably in race as much Jews as the people of Judea itself.

In due time Palestine was conquered by the Persians, and the Assyrians expelled. The Greeks conquered it from the Persians, the Romans from the Greeks, the Arabs from the Romans, and the Turks from the Arabs. We have here no fewer than six distinct races, or at all events nationalities, each of them for ages in possession of the parent country of the Hebrew race, embracing in all a period of five-and-twenty centuries, during which a commixture of their blood to more or less extent with that of the Jews was inevitable.

As to the Jews scattered over the wide world after the Roman conquest, it is clear that they are everywhere a mixed people, since everywhere they are found to partake more or less of the physical and even mental character of the races among which we find them. The Jews of England, Holland and Germany are often of fair complexion, with blue eyes and fair hair. The Jews of Poland and Russia have the Slavonian type; and those of Spain and Portugal, the Iberian. The Jews of Persia are very like Persians; while the Jews of India are black, and not distinguishable, bodily or intellectually, from ordinary Hindus. The Jews of China are as yellow as any Chinese, and instead of aquiline, have snub noses. The two last, indeed, are only Jews by religion, and hardly more so by race than the Buddhists of China and Japan are Hindus.

Wherever the Jews have intermixed with Asiatic races the result has been deterioration. Not so in Europe, for here they have neither undergone deterioration themselves, nor injured the race they have commingled with. Here we find them contending, on equal terms with the races among whom they are settled, in every pursuit open to their enterprise.

HAND-BOOK OF OVERLAND EXPEDITIONS.*

THIS valuable little book has just been re-printed in this country, and its merits are so great that no traveller should be without it. Captain Burton has edited this edition, and much enhanced its value with some notes. The editor very modestly says:

"I have been induced to re-edit it, at the instance of my friend

* *The Prairie Traveller*; a Hand-book for Overland Expeditions, with illustrations and itineraries of the principal routes between the Mississippi and the Pacific, and a map. By Randolph B. Marey, Captain U. S. Army, (now General Marey, Chief of Staff, army of the Potomac). Edited (with notes) by Richard F. Burton. Trübner & Co.

Mr. Trübner—not by the vain expectation of improving upon ‘a quarter of a century’s experience in (American) frontier life,’ and the work of an accomplished woodsman—but with the humble hope that a little collateral knowledge gathered in other lands, may add variety, and, perhaps, something of value to what is at present our best Handbook of Western Field Sports. When that ‘late lamented institution,’ the once United States, shall have passed away, and when, after this detestable and fratricidal war—the most disgraceful to human nature that civilization ever witnessed,—the New World shall be restored to order and tranquillity, our shikaris will not forget, that a single fortnight of comfortable travel suffices to transport them from fallow-deer and pheasant-shooting to the haunts of the bison and the grizzly bear. There is little chance of these animals being ‘improved off’ the Prairies, or even of their becoming rare during the life-time of the present generation; those who love noble game may thus save themselves a journey to monotonous India, or to pestilential Africa.”

The editor also observes:

“Sad experience in the Crimea, proves that were the subject compulsorily rendered a part of military studies, it would contribute not a little to the efficiency of the service. Men would not then pine over ‘green coffee,’ with tons of bones lying around them waiting to become bonfires. They would not starve upon half-rations, nor reduce them to a quarter by injudicious management and an ignorance touching soup.”

This is a subject of deep importance, and one which we hope will be kept before the notice of the authorities of this country. We cordially agree with the editor when he says “I would rather examine officers in the art of travel than ‘put them through’ Roman history, or even Latin.”

This work is not only valuable to the prairie traveller, but it will be found to be equally serviceable to all who are embarking on solitary or company expeditions. It should be also studied by all officers in the army, and even Volunteer officers would do well to see what can be learnt from it.

The name of the editor has stamped this book as an authority on travelling generally. We only wish that Captain Burton had given us more of his vast experience. When the notes do occur they are always valuable. The editor very judiciously says, “Tobacco and green tea are the prairie traveller’s soothers and stimulants. Wine and spirits should be regarded as remedial agents.” The book itself is a complete epitome of what a traveller ought to know respecting stores, clothing, arms, and sanitary arrangements. For particulars we must refer the reader to the book itself. In speaking of the civilization of Indians, General Marcy observes:

“The Indians of the Plains, notwithstanding the encomiums that

have been heaped upon their brethren who formerly occupied the Eastern States for their gratitude, have not, so far as I have observed, the most distant conception of that sentiment. You may confer numberless benefits upon them for years, and the more that is done for them the more they will expect. They do not seem to comprehend the motive which dictates an act of benevolence or charity, and they invariably attribute it to fear or the expectation of reward. When they make a present, it is with a view of getting more than its equivalent in return."

On this statement the editor makes the following remark :

"Such is the morale of all savages. The battle of life, and the selection of species, compels every man to do unto his neighbour what he would *not* have his neighbour do unto him. The word 'gratitude' is not to be found in the dialects of the wild men. Even in Hindostan, it must be borrowed from Arabic or Persian. And when trying to obtain an African equivalent for 'honest,' the nearest approach to it is 'one who does not steal.'"

General Marcy also observes :

"I have never yet been able to discover that the Western wild tribes possessed any of those attributes which among civilized nations are regarded as virtues adorning the human character. They have yet to be taught the first rudiments of civilization, and they are at this time as far from any knowledge of Christianity, and as worthy subjects for missionary enterprise, as the most untutored natives of the South Sea Islands.

"The only way to made these merciless freebooters fear or respect the authority of our government is, when they misbehave, first of all to chastise them well by striking such a blow as will be felt for a long time, and thus show them that we are superior to them in war. They will then respect us much more than when their good-will is purchased with presents.

"The opinion of a friend of mine, who has passed the last twenty-five years of his life among the Indians of the Rocky Mountains, corroborates the opinions I have advanced upon this head ; and although I do not endorse all of his sentiments, yet many of them are deduced from long and matured experience and critical observation. He says :

"They are the most onsartainest varmints in all creation, and I reckon tha'r not mor'n half human ; for you never seed a human, arter you'd fed and treated him to the best fixins in your lodge, jist turn round and steal all your horses, or ary other thing he could lay his hands on. No, not adzactly. He would feel kinder grateful, and ask you to spread a blanket in his lodge ef you ever passed that a-way. But the Injun he don't care shucks for you, and is ready to do you a heap of mischief as soon as he quits your feed. No, Cap.,' he continued, 'it's not the right way to give um presents to buy peace ; but ef I war governor of these yeer United States, I'll tell you what I'd do. I'd invite um all to a big feast, and make b'lieve I wanted to have a big talk ; and as soon as I got um all together, I'd pitch in and sculp about half of um, and then t'other half would be mighty

glad to make a peace that would stick. That's the way I'd make a treaty with the dog'ond, red-bellied varmints; and as sure as you're born, Cap., that's the only way.'

"I suggested to him the idea, that there would be a lack of good faith and honour in such a proceeding, and that it would be much more in accordance with my notions of fair dealing to meet them openly in the field, and there endeavour to punish them if they deserved it. To this he replied:—

"'Tain't no use to talk about honour with them, Cap.; they hain't got no such thing in um; and they won't show fair fight, any way you can fix it. Don't they kill and sculp a white man when-ar they get the better on him? The mean varmints, they'll never behave themselves until you give um a clean out and out licking. They can't understand white folk's ways, and they won't learn um; and ef you treat um decently, they think you are afeard. You may depend on't, Cap., the only way to treat Injuns is to thrash them well at first, then the balance will sorter take to you and behave themselves.'"

We must leave the discussion as to the truth of these assertions until a future occasion.

The following note is by the editor:

"Maugre some evidence to the contrary, I still believe that the North American Aborigine, like the Tasmanian and the Australian, is but a temporary denizen of the world who fails to succeed in the first struggle with nature. He is, like a wild animal, to be broken but not to be tamed; as the wolf can be taught to refrain from worrying, but cannot be made to act as a dog. In his wild state, the Indian falls before the white man. Settled and semi-civilized he dies of acute disease. He has virtually disappeared from the wide regions east of the Mississippi, and the same causes, still ceaselessly operating, point to his annihilation when the Prairie lands shall have become the grazing grounds of the Western World.

"It is a false sentimentalism that cannot look facts in the face; an unsound reverence that models Providence after its own fashion. The best and wisest book of this, or, perhaps, of any age—I allude to the *Origin of Species*,—which opens up the grandest views of life, is based upon a practical justification of the ways of eternal wisdom to man."

We can hardly fancy that the gallant captain's admiration of Mr. Darwin's book will be conceded by even all anthropologists. But it is not a little significant that the man who has travelled more largely than any one else living should come to the conclusion that Mr. Darwin's work is "the best and wisest of books in this, or, perhaps, of any age." We would only observe, in the words of a popular essayist, "there will be some who think his language too vehement for good taste. Others will think burning words needed by the disease of our time." Without, however, entirely sharing Captain Burton's admira-

tion of the *Origin of Species*, we still congratulate Mr. Darwin on having such an admirer. We also hope that such a man as Captain Burton will not be long allowed to remain buried at Fernando Po. He would be far more useful in England, assisting in training officers, travellers, and anthropologists, to be able to fulfil their respective duties as travellers and observers.

OWEN ON THE LIMBS OF THE GORILLA.*

THE first monograph of the present series of osteological comparisons of the bony framework of the anthropoid apes with that of man was published in 1835.* Professor Huxley† terms it "a memoir which by the accuracy of its descriptions, the carefulness of its comparisons, and the excellence of its figures, made an epoch in the history of our knowledge of the bony framework, not only of the chimpanzee, but of all the anthropoid apes." Twenty-eight years afterwards, the series is complete, and the quarto volume of thirty-one pages and thirteen magnificent lithographic plates, which form the seventh and concluding part, is now before us. We shall extract a few of the more interesting passages, bearing upon the differences between the structure of man and the ape.

The proportions of the anterior extremity in the gorilla are here given in the greatest detail, and minute comparisons are given of the various separate bones. As regards the hinder extremity, Professor Owen says:

"The iliac portion of the os innominatum shows in the human species alone that degree of expansion and forward inflexion of its upper and anterior border occasioning the form that suggested the term *pelvis* or basin for the segment of the skeleton composed of the ossa innominata and sacrum. Every ape, until the gorilla became known to the anatomist, had presented an iliac bone, not only long and narrow, but flat or, if hollow, with the cavity directed backwards instead of forwards. Such is the strictly quadrumanous condition of the bone in the common chimpanzee (*Troglodytes niger*) as well as in the orang-utans and gibbons. In the gorilla the iliac bone, besides showing a greater relative breadth in proportion to its length than in the chimpanzee, has the upper and outer border a little bent forward,

* "Osteological Contributions to the Natural History of the Anthropoid Apes." No. VII. Comparison of the Bones of the Limbs of the *Troglodytes Gorilla*, *Troglodytes niger*, and of different varieties of the Human Race; and on the general character of the skeleton of the Gorilla. By Professor Owen, F.R.S., F.Z.S., etc. —*Transactions of the Zoological Society*, 1862.

+ *Man's Place in Nature*, p. 20.

giving a moderate concavity or pelvic character to that part of the skeleton; it is, however, much inferior in degree to the human pelvis. The difference of size between the *os innominatum* of the gorilla and that of man is enormous; this part of the great ape's frame would fit a human giant of ten feet in height. But besides size, there are well marked differences in form and proportion."

Like comparison is made of the femur.

"In man the tibia, after the femur, is the longest bone of the skeleton; but in the gorilla the tibia is the shortest of all the long bones of the limbs, being barely two-thirds the length of the humerus. It is nearly one-fifth shorter than the human tibia, but is of equal thickness in the shaft, and of greater thickness at the upper end."

The analysis of the differences in the feet is entered into in detail.

"The chief departure from the human type of foot . . . is the angle at which the innermost toe in the gorilla articulates with the tarsus; whereby it becomes an opposable thumb, as in other *Quadrumana*. In the orang-utan the foot is longer than the leg; in the gorilla it is nearly as long; in man it is shorter; thus the length of the tibia in a man being sixteen inches, that of the foot bones is ten inches; whilst in the gorilla, the length of the tibia being twelve inches and a half, that of the foot is twelve inches. The foot is so articulated with the leg in the gorilla that the sole is turned a little inward; the concavity of the sole lengthwise is greater than in man by reason of the permanent partial flexure of the toes, the disposition of the articular ligaments being such as to oppose some force to the attempt to press the toes into a straight line, such as they generally present in man. The transverse arch or concavity is less deep across the tarsometatarsal joints than in man. The tarsus is shorter in proportion to the foot, and is broader than in man. There is less inequality in respect of thickness between the hallux and the other digits, and greater inequality in respect of length than in man; above all, the innermost digit, by express modification of size and shape of the entocuneiform, is set at nearly a right angle to the other toes, converting the foot into a hand, and one gifted with a prodigious power of grasp."

Entering into detail, Professor Owen says of the entocuneiform:

"The entocuneiform of the gorilla differs chiefly in the form and shape of the surface for the metatarsal of the hallux; in man this surface is nearly flat, and forms or covers the forepart of the bone, presenting there a reniform figure; in the gorilla, the surface is convex transversely, curving from the fore to the inner side of the bone, and forming almost the anterior half of that side. The outer (fibular) third of the forepart of the entocuneiform is rough or nonarticular, and encroaches by a notch upon that border of the articular surface. The navicular surface is concave, and continuous with a narrow vertical tract for the entocuneiform. A second surface for the same bone is afforded by the posterior facet of an articular surface on the upper and outer part of the entocuneiform, the anterior facet of which articulates with the base of the second metatarsal."

As regards this latter, Professor Owen remarks :

"The metatarsal of the hallux in the gorilla shows a corresponding modification to that of the entocuneiform in regard to the shape and direction of its proximal articular surface, which is concave from side to side, and looks obliquely backward and a little outward, affording a favourable position and much freedom of motion of the innermost toe, as a flexible prehensile thumb of much power. The whole metatarsal is shorter and more slender than in man; the distal articular surface is more convex and bent down."

Professor Owen sums up his retrospect of the pedal modifications of the gorilla as follows.

"In all the characters by which the bones of the foot depart in the gorilla from the human type, those of the chimpanzee recede in a greater degree, the foot being in that smaller ape better adapted for grasping and climbing, and less adapted for occasional upright posture and motion upon the lower limbs. The lever of the heel is relatively shorter and more slender, the hallux has still more slender proportions, and the whole foot is narrower in proportion to its length, more curved towards the planta, and more inverted, than in the chimpanzee."

In the description of two beautifully lithographed plates from the photographs taken by Mr. Fenton from the specimens in the British Museum collection, Professor Owen enters in detail into the relative proportions of trunk and limbs in the gorilla. He says :

"The trunk of the gorilla, according to the human standard, would represent that of a giant of some eight feet in height, and the jaws and upper limbs have a proportional or corresponding magnitude; but the size of the constituent bones is such as to exhibit, in this part of the skeleton, much greater breadth, strength, and massiveness than is present in the Irish Giant of that height in the Museum of the Royal College of Surgeons. The upper extremities, though so long in respect of the whole body, bear to the trunk nearly the same proportions as in Man. Take away the lower limbs in both skeletons, and this similarity becomes more obvious. In both the lower ends of the antibrachial bones, as the arm hangs down, reach the same transverse line as the ischial tuberosities; and they ascend scarcely an inch below those parts in the chimpanzee. The embryonal proportions of the lower limbs bring down the stature of the gorilla below that of the average in the well-formed European. In a skeleton of such, measuring five feet nine inches from the vertex to the sole, the length of the trunk is two feet six inches; in the skeleton of a male gorilla, measuring five feet six inches, in as erect a position as it can naturally be brought, the length of the trunk is three feet. From the vertex to the ischial tuberosities in the man measures three feet; in the gorilla it measures only three feet five inches, owing to the inferior height of the cranium, even with the parietal crest fully developed. The similarity of proportion of the upper limb to the trunk in length is

due mainly to the greater proportional length of the pelvis in the gorilla. The humerus in man extends as low as the interspace between the third and fourth lumbar vertebræ; in the gorilla it extends to that between the vertebræ answering to the fourth and fifth lumbar, but in man the humeral condyles hang nearly two inches above the iliac labrum, while in the gorilla they extend as far below that labrum. The tips of the fingers in man, when he stands erect, usually reach to the middle of the femora; in the gorilla they reach to about an inch from the lower end. The length of the bones of the upper limb in the human skeleton is two feet nine inches; in the gorilla it is three feet eight inches; in the Irish Giant it is three feet two inches and a half. The lower limbs, measured from the head of the femur to the under surface of the calcaneum, rather exceed in length those of the head and trunk together in man; in the gorilla they are nearly one foot shorter.

	Man. .5 ft. 9 in.	Gorilla. .5 ft. 6 in.
Length of head and trunk	3 0	3 5
Length of lower limb	3 1	2 6

"The shorter lower limb of the gorilla is terminated by a longer foot than in man; the bony frame of that part measures twelve inches in length in the gorilla, and nine inches and a half in the human skeleton compared. The bony hand of the gorilla is ten inches in length; in the man it is seven inches and one-third.

"I would remark that whilst the bony frame of the gorilla shows the nearest approaches amongst apes to the truly human characteristics of the skeleton, it differs in a greater degree than does that of lower *Quadrumana* by its adaptive developments. These differences relate to the great bodily strength and power of bite of the gorilla, and do not approximate it to any lower form, assuredly not to the baboons with their short and narrow thorax, long and narrow pelvis, long loins, with anapophysially interlocked vertebræ, and short-spined neck-bones."

As regards the skeletal variations in the different races of mankind, Professor Owen says—

"In these illustrations of the comparative osteology of the European and Australian, the physical superiority of the civilized man is exemplified. No known conditions of climate are more favourable to a perfect natural development of the 'noble savage in his native wilds,' free from all the restraints of so-called 'artificial' society, than that of Australia. The wild mammals of the woods and plains, and the teeming life of the sea, excite and reward the healthy exercise of the senses and muscular system of the aboriginal sportsman of that dry, sunny, and healthful land. Yet the advantage in regard to size and strength of body, especially as exemplified by the bony framework, is decidedly with the civilized European."

MAN AND BEAST.

TO THE EDITOR OF THE ANTHROPOLOGICAL REVIEW.

Sir,—The late work of Professor Huxley has attracted much attention amongst anthropologists; and as its learned author would say, it is the duty of the man of science "to reexamine the common stock in trade, so that he may make sure how far the store of bullion in the cellar, on the faith of whose existence so much paper has been circulating, is really the solid gold of truth."

The vehement manner in which Professor Huxley has supported the theory of the derivation of Man from the inferior animals, has surprised many of those biologists who were aware of the equally vehement manner in which he had previously denied both progression and transmutation. There was a time, ten short years ago, when the same eloquence which is now employed in lowering "Man's place in Nature," uttered its vehement strains in the scientific theatre of Albemarle Street* in disparagement of the transmutative doctrine. There was a time, when the alleged instances of transmutation afforded by the class of fishes were tested by the anatomical and embryological conclusions disclosed by Vogt. "Those theorists" who contended that there had been a progressive development of life since the globe first became habitable, commencing with the simplest forms of organization, and proceeding regularly upwards to the most complex, were severely criticized, and it was stated that such a view of creation was not compatible with the facts disclosed by geological researches. Professor Huxley at that time confidently assured his audience that a close examination dispelled the notion of progressive development, and proved that it had no solid foundation.

While recognizing to Professor Huxley, as to every other scientific man, a free and perfect right to change his opinions, we would have thought that some charitable feeling might have been due on his part to those zoologists who may be working out a theory of transmutation, and who may object to accept in its entirety the Darwinian system. Professor Huxley, however, tells us that this hypothesis of animal causation is the only one which has any scientific existence. We, on the other hand, prefer to suspend our judgment on the matter,

* *Journal of the Royal Institution*, 1855.

regarding no transmutative theory as yet proven. That a future generation may witness the development of a more perfect theory than that of Mr. Darwin is extremely probable; and we think it most unfair that Mr. Huxley should put us in the alternative, "either Darwinian or nothing."* The advocates of the Ptolemaic theory of the planetary motions, triumphantly unopposed, might have put the case "Ptolemy or nothing" prior to the age of Copernicus; and this use of the *argumentum ad ignorantiam* on their part would have inspired subsequent generations with a lower idea of their prescience than the old astronomers merit.

Professor Huxley states that—"The question of questions for mankind—the problem which underlies all others, and is more deeply interesting than any other—is the ascertainment of the place which man occupies in nature, and his relations to the universe of things."

Face to face with the present position of metaphysical thought in England, that anthropology which can find no higher employment for the human mind than the ascertainment of man's relations with the baboons will find no place at all. Even if the transmutation of species were demonstrated, and if the intervening links connecting the human species with the baboons were discovered, the psychical attributes which distinguish man from the inferior types baffle the analysis of the reasoner. Even on the assumption that the intellect of man is so directly coordinated with his material structure as to be dependent on the amount, complication, and quality of the brain, the vast cerebral gulf between man and the ape draws a wide line of demarcation between the psychical nature of the two forms. And when we glance at the vast and high frontal lobe of the human brain, the expanded median lobe, and the bulky and projecting occipital lobe, whose mass extends backwards far beyond the cerebellum, we see a substratum on which the psychical manifestations of man undergo their complicated changes and alternations. We cannot discover in the highest ape any such material organ.

With respect to these higher psychical manifestations which are not directly correlated with the nervous system, and the proof of whose existence does not rest upon the demonstration of *Man's Place in Nature*, we shall not allude to them here. Professor Huxley would not appreciate our argument, and we are content to say, *Dignius credere quam scire*.

To meet Professor Huxley on the more common ground of meta-

* *On our Knowledge of the Causes of the Phenomena of Organic Nature*. 8vo. London, 1862, p. 150.

physical thought, we are surprised at the manner in which he disregards all the attributes of perceptive reason developed in man, and asserts that the highest knowledge is the knowledge of our relations to the outward world. A more subtle analysis of the hidden fountains of the human mind was revealed to us from the schools of Alexandria,* and has been revived in the latter Germanic philosophy. A more noble occupation of the mind of the truly positive philosopher is that which, attempting to unravel the physiological and psychological significance of man himself, absolutely, as he stands, without reference to any other being, obeys implicitly the direction of Thales, γνῶθι σεαυτὸν. A more truthful task for the philosophic inquirer, would be like the fervent and nature-seeking philosopher of Berlin, who

" Did cast into the depths of his own soul again
The fearless glance, and there, with humble heart,
Did prove the secret of all mythic thought,"

to discover those distinctions between the relations of brain and thought, on which alone a consistent science of psychology will be based.

It may appear strange that a writer who adopts the metaphors of the theological school of teleologists, should found the essential doctrines of his own philosophy on the teachings of the most advanced school of Materialists in Germany. When we glance over the pages of *Man's Place in Nature*, we are irresistibly led to the conviction that the voice is the voice of Büchner, though the words are those of Huxley. The learned author of *Kraft und Stoff* will, however, scarcely recognize his disciple in the tortuous involutions of metaphysical analysis through which he drags his weary auditor, with a view, firstly, to prove the analogy between the cerebral structure and a devised machine, and, secondly, to base our ideas of psychological variation on functional changes in the brain's structure.

Professor Huxley, in reply to the argument brought against him by the Rev. Mr. Molesworth and Mr. Luke Burke, who contended that "the superior psychical manifestations of the human species must be associated with concurrent modifications of his bodily frame and organs," says, "The argument that because there is an immense difference between a Man's intelligence and an Ape's, therefore, there must be an equally immense difference between their brains, appears to me to be about as well based as the reasoning by which one should endeavour to prove that because there is a 'great gulf between a watch

* Plotius, *Enneades*, v, lib. 5.

that keeps accurate time, and another that will not go at all, there is, therefore, a great structural *hiatus* between the two watches. A hair in the balance-wheel, a little rust on a pinion, a bend in a tooth of the escapement, a something so slight that only the practised eye of the watchmaker can discover it, may be the source of all the difference."

The utter inapplicability of the comparison between a "moving thing that has life" and an engine-turned machine made by man, seems transparently obvious. Moreover, the watch simile is completely threadbare; it has been used *usque ad nauseam* by Nieuwentyt and Paley, and refuted by more accurate metaphysicians. Professor Huxley's expression, "*all* the difference," we do not consider to be justified by his argument. The "rust on the pinion" is, indeed, a structural *hiatus*, but we could conceive that the difference may arise from other causes. Expansion of the metal of the pendulum by heat would be a structural change that would also account for the stoppage, and we have no doubt that some analogous "difference in the combination of the primary molecular forces of living substance" might account for *some* of the variation between Man and the Apes, without confidently assigning to it the *vera causa* of the totality of differentiation.

Professor Huxley is forced (we presume by "atavism") to revert to the original definitions as propounded by Gratiolet; and the writer, who boasts of "having done his best to sweep away the vanity" of forming a classification based on physical characters, as understood by the old anatomists, and who alleges "that the attempt to draw a psychical distinction is equally futile," actually proposes the following tests of differentiation: "Let it be admitted, however, that the brain of man is absolutely distinguished from that of the highest known apes, 1st, by its large size, as compared with the cerebral nerves; 2nd, by the existence of the lobule of the marginal convolution; 3rd, by the absence of the external perpendicular fissure."

Certainly the above cannot be deemed "structural differences which shall be absolutely inappreciable to us with our present means of investigation," still less are they differences which we can deem to be modifiable under the operation of a law of natural selection. Of course, if we abrogate our position as students of truth, inductively ascertained, we can realise how long successive ages may have operated to influence the convolutions of the brain.

But the realization of such a chimerical dream belongs to that future period, which some hope is fast approaching, when the truths of science, which have been obtained through laborious efforts during

the past two hundred years, will be forgotten, and "natural selection," or some equally inconclusive figment of the imagination will be elevated as the dogma unto which all scientific men must yield belief.

The brightest periods of science and philosophy in past ages have often been succeeded by retrogressive epochs, similar in nature to the "new Saturnian age of lead," is now in the ascendant. To Germany and France, where the developmental sympathies of zoologists have not yet led them to propound a system so thoroughly at variance with ascertained truths as that of natural selection, we may look at some future time for the diffusion of a system demonstrating transmutation on grounds based on observed facts, and compatible with our present state of knowledge.

Professor Huxley's work is, however, styled *Evidence as to Man's Place in Nature*. The nature of this evidence it is the duty of the sincere anthropologist to sift, and we will endeavour fearlessly to perform this task as regards some of the facts which Professor Huxley brings forward.

Dissatisfied with the state of our knowledge respecting the measurement of the human skull, Professor Huxley proposes an entirely new system of classification. He says, "I have arrived at the conviction that no comparison of crania is worth very much that is not founded upon the establishment of a relatively fixed base line, to which the measurement in all cases must be referred. Nor do I think it is a very difficult matter to decide what that base line should be." He, therefore, selects a line as the normal base of the skull, or basicranial axis, which line passes through the centres of the bones termed basioccipital, basisphenoid, and presphenoid. He states that this basicranial axis is a relatively fixed line, or to which the arcs described by the various cranial axes form various planes, at angles all comparable with the given modulus afforded by the basicranial line. Professor Huxley has, therefore, completely pledged himself to the new system of craniometry proposed by him in his third essay "On the Fossil Remains of Man."

Six skulls are drawn on Professor Huxley's 79th page, respectively those of the Australian, squirrel monkey, gorilla, baboon, howler, and lemur. Glancing at these figures, the first impression which an inquirer, unacquainted with the anatomical details of the case, would be led unwarily to make, would be, that the figures were all drawn on one uniform plane, so as to show fairly the degree

of overlap of the cerebrum over the cerebellum in those apes in which an overlap is visible. Professor Huxley, however, does not adopt any such plan; the base line of each skull, parallel with the bottom of his page, is not the "basicranial" line suggested by him; it is not the "tentorial" line; it is not a line transverse to the axis of the occipital foramen; it is not transverse to the Abbé Frère's line from the *meatus* to the coronal suture; it is not the "glabella-occipital" line; nor is it the *longitudo racheos* of Von Baër. What then is it? It is a line drawn to give the cerebral cavity the same length in each figure respectively; a line which has the effect of placing the *mycetes* and *lemur* skulls at the foot of his plate at a distorted angle wholly at variance with that in which the other skulls are placed. The effect of this shifting process has been to double, at least, the postcerebellar overlap in the *chrysotrrix*; to enlarge it from -0 to $+\frac{3}{10}$ to $\frac{4}{10}$ inch in the gorilla and howler monkey, and almost to treble its dimensions in the baboon. We have rarely seen so peculiar an application of the pictorial *art de pose* in the production of figures intended for a general audience, and destined to illustrate nice points of scientific controversy. We are entirely at a loss to know what is the cause of this discrepancy. We catch, however, a glimmering light from the advertisement at the beginning. We are told that "the greater part of the substance of the following essay has already been published in the form of oral discourses, addressed to widely different audiences during the past three years." Peradventure one of the modes of cranial admeasurement which Mr. Huxley so seriously propounds belongs to the "pre-Darwinian" age of the controversy; peradventure it even dates its early embryonic existence to the period when Professor Huxley pleaded so strongly against the doctrines of transmutation. However this may be, and whatever change may have taken place in Professor Huxley's opinions, the system of measurement which he advocates in his second is wholly irreconcilable with that taken up in his third essay. His two propositions are mutually destructive. As he takes due care to impress on our minds that "it is the first duty of an hypothesis to be intelligible," this unaccountable laxity seems strangely out of place when applying an exact system of craniometry to the elucidation of "Man's Place in Nature."

Whatever criticisms we may pass upon the anatomical value of the facts put forward by Professor Huxley, we are free to admit that they are worthy far more serious consideration than those promulgated by

his followers. Sir Charles Lyell refers to alleged testimony* on this point. We are in a position to estimate the scientific value of the generalization alluded to. It is sought—by the demonstration of the alleged fact that the verticality of the occiput in "Turanian" crania depends, not upon curtailment of cerebellum, but upon the curtailment of the posterior apical lobules of the cerebral hemispheres—to show that the great overlapping cerebral lobe is not a constant character in man. Rarely has an error so grave of fact, observation, and deduction been committed even by the most ill-informed phrenologists. It is true, that in many short-headed or brachycephalic skulls the cerebral lobes do not project far over, or may even, according to Retzius, fall short of the cerebellum. The demonstration of this fact rests on an examination of the bisected skull. The greatest authority on cerebral anatomy in Europe† has, however, warned us against too confident generalizations. He has pointed out that often a truncated occiput is correlated with an immense, a projecting occiput with an atrophied cerebral lobe. The allegation that we can predict by mere inspection of the outward aspect of the occiput of any skull the degree to which the cerebral lobes project over the cerebellum we regard as one which cannot be considered seriously on any scientific grounds whatever.

That which has tended very much to keep alive the controversy is, that some advocates of transmutation have shrunk from testing the truth of their theories before the world, and have neglected those public opportunities which have occasionally arisen for the elucidation of the question. The audience collected last year at the British Association (Section D) were told that they were "a somewhat promiscuous assemblage," of "limited information," and "scarcely competent to judge of matters of anatomical fact." We have no sympathy for the deviser of this equivocal excuse for not telling a plain story, especially as we remember that some of England's best zoologists and anatomists, the *élite* of British science, were present on the occasion. Messrs. Schröder van der Kolk and Vrolik say—"Il paraît que l'année 1861 a été funeste en Angleterre aux Chimpanzés et aux Orangs." The year 1862 has been still more disastrous to the memory of the founder of systematic zoology. The remark has been made by a controversialist—"Why Linnæus named the *Cebus capu-*

* "See also, on this subject, Professor Rolleston on the Slight degree of Backward Extension of the Cerebrum in some races of Men.—*Medical Times*, October, 1862, p. 419." Sir Charles Lyell, *Antiquity of Man*; 8vo, London, 1863, p. 488.

† Gratiolet, *Bull. Soc. Anthropol.*, vol. ii, p. 257.

cinus Cebus fatuellus I know not." Zoologists of "limited information" certainly thought that Linnæus named it *Simia fatuellus*,* and that the name *Cebus fatuellus* was given by Erxleben, in the year 1777, when the Swedish naturalist had long ceased to write, and only a year before his decease. It cannot be expected that even "a promiscuous audience" would be so credulous on a matter of elementary zoological fact as to believe that Linnæus gave generic value to the distinction between the Catarhine and Platyrrhine monkeys. We must not, however, expect too much from an author who, before the Royal Institution, spoke of the Vervet monkey as *Cercopithecus Lalandi*, ignoring altogether the labours of the deceased zoologist and true labourer, Isidore Geoffroy St. Hilaire † The illustrious Frenchman whose labours are thus slurred over has carefully pointed out the marks of distinction between the *Cercopithecus Lalandi*, Is. Geoff. (*C. pusillus*, Desmoulins), and the true Vervet, *Cercopithecus pygerythrus*, Desmarest; and when we see these two wholly distinct species confused together, we cannot but wonder in amazement what can possibly be the species of monkey to which such exceedingly vague reference is made.

The same writer, speaking of Schröder van der Kolk and Vrolik's *Note sur l'Encephale de l'orang*, confidently states, "so far as the ventricles go, (*sic in orig.*) the figures given in the current number of the *Natural History Review* might very easily be interchanged with that standing for human structures in the drawing of anatomists, who had never dreamt of contrasting these organs with those of the ape. And should any one retaining any lurking kindness for the posterior cornu, come thus warped, to decide which of the two figures was intended for the simious, and which for the human brain, infallibly his judgment would be wrong." We would ask any competent human anatomist to compare the anterior cornua of the orang and chimpanzee with those of man, and contrast the stunted, rounded, comparatively straight anterior horn of the ape's with its tapering, slender, divaricated homologue in man. No serious student, anxious only to arrive at a fair conclusion on the facts, and not by meretricious eloquence to enlist the sympathies of a "promiscuous audience," will venture to assert that they can "easily be interchanged." The criticism applied to Apollonides, "*Tu certe neque tu vides intelligis, neque tu audes memoria tenes*," is most applicable in the present case.

The mode in which the presence of a simial structure, admittedly

* *Systema Naturæ*, ed. xii, vol. i, p. 43. *Systema Regni Animalis*, 8vo, p. 51.

† D'Orbigny, *Dict. Univ. d'Histoire Naturelle*.

homologous with the *hippocampus minor* in man is paraded, with a view to obscure our perception of its developmental inferiority, is a characteristic example of the reasoning of the new transmutative school. No zoologist, however, of any repute, has denied the existence of these rudimentary structures.

It would be utterly inconclusive, and at an absurd variance with logical necessity, to assert, because a first-rate man-of-war, carrying a hundred and twenty or a hundred and thirty guns, exhibited one of the highest forms of naval power, that consequently smaller craft must be entirely destitute of any armament whatever. The forced application of the dictum of the schools *de omni et nullo*, is wholly inapplicable to the spirit of zoological classification, which is founded rather on our ideas of subordination to known type than any class characters.

The skeleton of the orang would have afforded in the "*indice*" of the great toe, the same ground for impugning that zoological character of man which the brain of orang, in its "*indice du petit pied d'Hippocampe*" afforded in the denial of the "*hippocampus minor*" as a zoological character. A disingenuous advocate would have found the one just as serviceable for his purpose as the other. Viewed as discoveries, they are alike; but both closely resemble that of a certain nidamental structure, which gives, usually, but a short-lived pleasure to its finder.

In the above observations which it has been our duty to make on Professor Huxley's work, we have endeavoured while criticising his method of inquiry to recognize the fact that a derivative origin of the whole of the animate creation may be hereafter proved by accurate scientific induction. The day is long gone by when the probability of transmutation could be sneered down as the phantasm of a dreamer, or the product of the scepticism of an infidel. The possibility, nay, even the extreme likelihood of such a law being eventually established is now rapidly becoming a tolerated doctrine in the creed of deep thinking scientific men. Should such a theory be proved, it must be borne in mind that until it is so inductively demonstrated by observation, experiment, or well grounded inference, we are not entitled to assume its existence. If there is such a derivative law, and we have now the sanction of some of our highest zoologists to believe in its existence, when the time comes we shall not shrink from applying it to the discovery of the genesis of the human species. We have no real fear that the consequences which may result from the practical application of this law will be prejudicial to religion, morality, or society. It is the duty of scientific teachers to endeavour

to discover this law; it is the duty of those who are sincere votaries of the truths of science to accept the law when it shall have been inductively proved. But, until the day comes when such a law shall be fully, entirely, and satisfactorily established, we must strenuously protest against the diffusion, even amongst "the wider circle of the intelligent public," of essays, the object of which is to render "Man's place in Nature" closer to that of the brute creation. Professor Huxley's work is especially obnoxious to criticism, as it does not import a single new fact into the treasury of scientific knowledge; it contains no exalted views as regards man's true position, and the volume generally is destitute of that spirit which aims at the diffusion of accurate truths, ascertained by careful and patient investigation, and presented to the world in a temperate and ingenuous spirit.

We are now at the very threshold of the great controversy respecting man's true zoological position. To all those who may feel disposed to investigate the subject, and who may be inclined either to check free inquiry, or to rush hastily to a dogmatic conclusion, we would say, in the words of the philosopher of Königsberg, whose mental teachings have revolutionized the thoughts of mankind.

"Let each thinker pursue his own path; if he shews talent, if he gives evidence of profound thought, in one word, if he shows that he possesses the power of reasoning, reason is always the gainer. If you have recourse to other means, if you attempt to coerce reason, if you raise the cry of 'treason to humanity,' if you excite the feelings of the crowd, which can neither understand nor sympathize with such subtle speculations, you will only make yourselves ridiculous. For the question does not concern the advantage or disadvantage which we are expected to reap from such inquiries; the question is merely, how far reason can advance in the field of speculation apart from all kind of interest, and whether we may depend upon the exertions of speculative reason, or must renounce all reliance upon it. Instead of joining the combatants, it is your part to be a tranquil spectator of the struggle—a laborious struggle for the parties engaged, but attended in its progress, as well as in its result, with the most advantageous consequences for the interests of thought and knowledge."*

Ἀνθρωπος.

* *Kritik der Vernunft.*

MEDICAL PSYCHOLOGY.*

MR. DUNN is well known as one of our most industrious physiologists. A proof of this conclusion is to be found in the work before us, compiled during the frequent hasty leisures of an arduous professional life, and comprising some of the most florid expositions of the peculiar doctrines of the Idealist school of physiology. Mr. Dunn's generalizations to a great extent are connected with those of the phrenologist; we feel, however, that we should be doing him an injustice were we to classify them as phrenological. On the contrary, the influence of the school of Gratiolet is clearly manifest in some of Mr. Dunn's conclusions. The following is Mr. Dunn's classification of the various modes of nerve-action.

"Nervous actions are of a threefold character—physical, or *excito-motory*; sensory, or *sensory-motor*; and volitional, or *intelligent*. But it is only in the highest class—the vertebrata, and where there exists a cerebro-spinal system—that we recognize the existence and co-ordination of all these different kinds of nervous actions. In the very lowest animal organisms, the physical or excito-motory alone are present. These are essentially automatic, and occur without sensation; to them, in the invertebrate kingdom, and as typical of animal life, the sensory or sensory-motor are superadded; whilst it is solely in the vertebrate series that the intelligent and purely voluntary come into play. Throughout the whole of the vertebrate subkingdom, the type of the nervous system, including man himself, is the same. It admits of a threefold division, in accordance with its functional endowments and co-ordinations—into,

"1. The physical or excito-motory and reflex—the true spinal system of the late Dr. Marshall Hall.

"2. The nutritive and secretory, or ganglionic system, administering to the functions of animal life.

"The sentient, percipient, and intellectual, or the cerebro-spinal system."

As regards the brain, the conclusions of Leuret and Foville are thus adopted by Mr. Dunn.

"Throughout the whole of the vertebrate subkingdom, the type of the brain is the same; and, on a general survey of the series, it cannot escape observation that the longitudinal convolutions, from their

* *Medical Psychology*; comprising a brief Exposition of the leading Phenomena of the Mental States, and of the Nervous Apparatus through which they are manifested, with a view to the better understanding and Elucidation of the Mental Phenomena on the Symptoms of Disease. By Robert Dunn, F.R.C.S., England. 12mo. London, 1863.

first workings out, increase in number, volume, extension backwards, and in complexity of structure, as the animal rises in the scale of intelligence, and as the range of its perceptive activities widens. To unravel all the complexities of the intimate structure of the cerebral hemispheres has hitherto baffled the most eminent anatomists, with all the appliances that science can furnish; but Foville and Leuret have clearly shown that these hemispheres are chiefly made up of three distinct series of convolutions—the *longitudinal*, the *commissural* or *anastomosing*, and the *transverse series*. The longitudinal series are the first to be developed; and, according to Foville, they arise from a common central nucleus, the *locus perforatus*, and are closely banded together. It is indisputable that the internal convolutions are the primitive basement convolutions of the hemispheres, forming the broad lines of demarcation between the sensory and perceptive ganglia, between the sensational and perceptive apparatus; they are the central organs of the perceptive consciousness, and therefore the common portals to intellectual action and volitional power. Now, since these basement convolutions are the first developed, and as the whole series of longitudinal convolutions arising from the same central part are most intimately connected and associated with each other, and are commissurally banded together, my own mind rests in the conviction that *an unifying bond of action pervades them*, and that the entire series of longitudinal convolutions, as an aggregate or whole, constitutes the nervous apparatus of the perceptive consciousness—in other words, the instruments of all our immediate or intuitive cognitions; not only the seat of the perceptive faculties, through the instrumentality of which, by the inlets of the special senses, we acquire a knowledge of external existences, their sensible qualities and physical attributes—of the differences and relations of things, their order or arrangement and numbers, and the phenomena of their action or events; but also of those purely ideational activities which form constituent elements in the composite nature of the personal or individual and social affections, and of the emotional, moral, and religious feelings of man.”

We would remark on this passage, that we presume the longitudinal convolutions are developed in the Australian races and the Andaman Islanders; and we can only express our silent wonder how their “individual or social affections,” and “emotional, moral, and religious feelings,” are correlated with their brain development.

Mr. Dunn suggests what we believe to be a novel interpretation of the transverse convolutions of the brain.

“After further observation and reflection, I have been led to another generalization, for the establishment or refutation of which I would appeal to the observations of the naturalist, as well as to the anatomical researches of the comparative anatomist. My own mind, at present, rests on the conviction that the vesicular matter of the transverse convolutions on the surface of the hemispheres furnishes the material conditions, the substratum, for the manifestation of the

highest psychical activities : in other words, that the transverse series, as an aggregate or whole, is the nervous apparatus of the intellectual consciousness.

"It cannot be denied that the transverse are anatomically a distinct series of convolutions. They do not spring from the same central part as the longitudinal; they have not a common origin, nor any direct connexion with the *locus perforatus*, though the two series are most intimately connected and closely associated by a third, the commissural or anastomosing, through the instrumentality of which a co-ordinating and unifying action is maintained throughout the whole of the hemispherical ganglia. They are almost exclusively human, but not altogether and entirely so; still, wherever they do exist, as they manifestly do in the horse and the elephant, there we have unmistakable evidence of the manifestation of *reasoning processes* being at times carried on. Now, as the longitudinal convolutions of the hemispheres increase in number, volume, and complexity of structure, in the same ratio as the perceptive activities of the animal increase in number, and as the range of their action is widened, so do I hold and believe that, on an appeal to nature, it will be found that the transverse convolutions, from their first appearance on the surface of the hemispheres, become more distinct and numerous as the animal rises in the scale of intellectual being, and as phenomena of the intellectual consciousness become more unequivocally manifested by it."

The differences between man and the inferior animals are thus defined by Mr. Dunn. Admitting that the sensory-apparatus of man are inferior in degree to those of the animals, Mr. Dunn alleges :

"But the difference between him and them rests specifically and fundamentally in the *greater number* and *higher order* of his psychical activities—in his intellectual, moral, and religious endowments, his reasoning and reflective powers; for the lower animals are alike destitute of the highest plane of perceptive development—of the frontal, towering, and backwardly extending convolutions—the seat of the moral and religious intuitions—the *sole prerogatives of man*; and, through the whole series, with some rare exceptions among the highest mammalia, of those characteristically large and deep, but unsymmetrical transverse convolutions on the surface of the hemispheres, 'adorning the human brow as with a diadem,' and which, as I believe, are the seat of the faculties of the intellectual consciousness—of imitation, imagination, ratiocination, and reflection—in fine, of the faculties of calculation, of order or arrangement, of comparison and causality, of ideality and wonder."

He further goes on to cite the parrot and the mocking-bird, the horse and the elephant, as examples of brains possessing "transverse convolutions on the *surface* of the hemispheres," and (if we understand him correctly) correlates this cerebral complication with the higher degree of mental energy manifested by these animals.

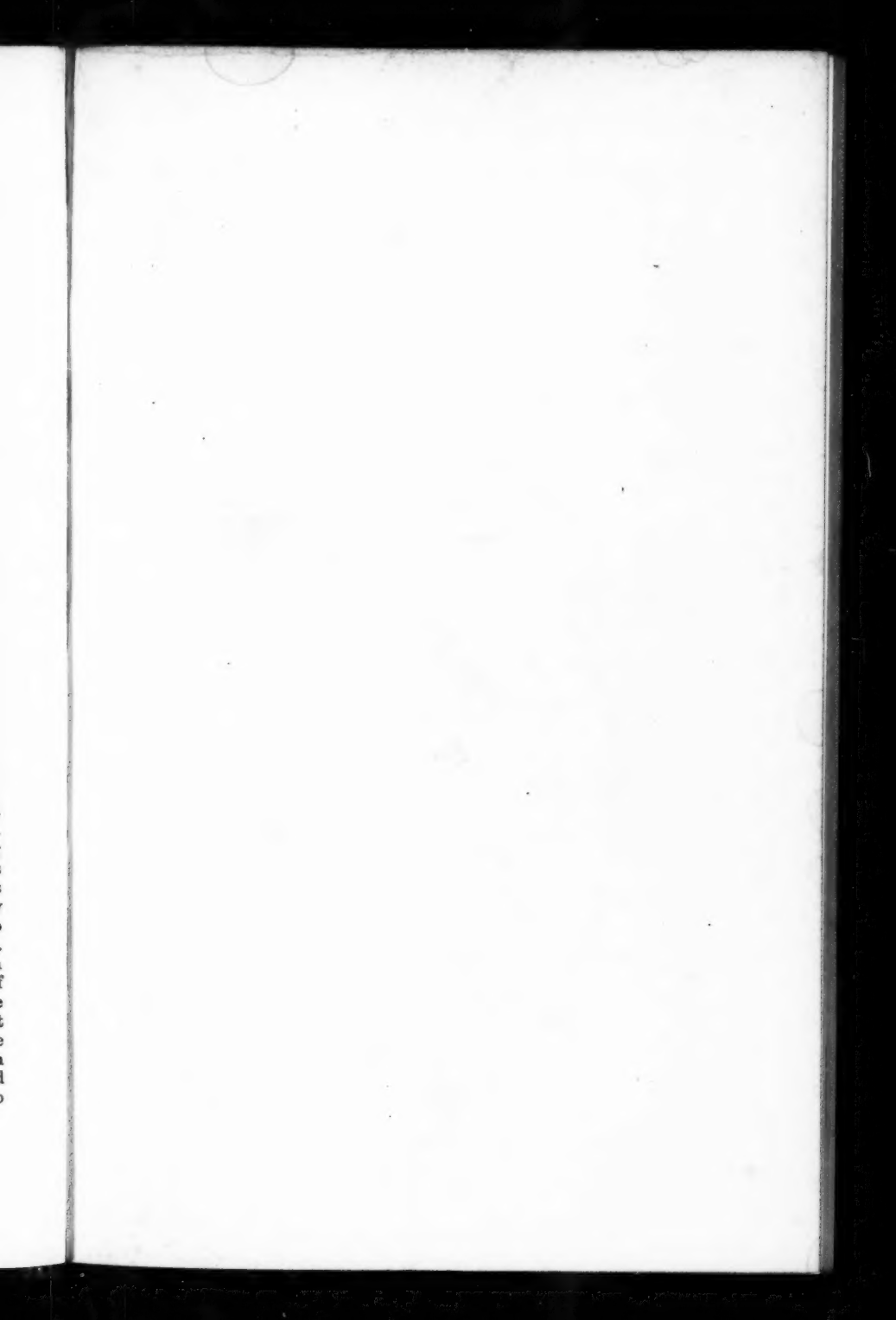
Into the purely pathological portions of this interesting little work

we shall not enter; we have no doubt that the medical profession, for which they are especially intended, will peruse them with the deepest interest. Mr. Dunn's previously published papers on "The Unity of the Human Race," conceived frequently in a spirit which transgresses the bounds of proved inductive science, illustrate a phase of anthropological thought which we believe is rapidly passing away. We, however, commend the present little work to the attention of our readers as one which places the theories of the physiological school, in which Mr. Dunn is a teacher, in a pleasant and palatable form before the public.

ON THE DISCOVERY OF SUPPOSED HUMAN REMAINS IN THE TOOL-BEARING DRIFT OF MOULIN-QUIGNON.

By ALFRED TYLOR, Esq., F.G.S., F.L.S.

A NOTICE of the discovery of human remains in the celebrated gravel-pit of Moulin-Quignon, near Abbeville, appears in *l'Abbeillois* of April 9th, 1863. The important details are as follows. At the end of last March a quarryman named Halatre, who was working in this quarry, brought M. Boucher de Perthes a shaped flint with a fragment of bone, both stated to have been found there. On clearing away the sand in which this fragment was imbedded, M. Boucher de Perthes found it to be a human molar much damaged. He immediately followed Halatre to Moulin-Quignon, verified the spot from which the hatchet and tooth had been taken, ascertained that the place was free from any infiltration or intrusion, and had the search continued, but for that day without success. Feeling sure that some other remains of the body to which this molar had belonged ought to be found there, M. Boucher de Perthes charged the workmen not to disturb anything they might come upon during his absence, but to let him know if anything came to light, and on the 28th of March a quarryman named Vasseur came to tell him that something resembling a bone was to be seen in the bed of gravel. M. Boucher de Perthes went to the place, found the extremity of the bone enveloped in its matrix, visible to the extent of nearly an inch: the bone was carefully extracted whole by working round it with a pickaxe, and proved to be a human jaw, very much discoloured, but not injured by rolling. The jaw, on a cursory inspection, showed no marked deviation from the ordinary type, was light, and not converted into phosphate of lime. A few inches off was a flint hatchet, also imbedded in the gravel, whence M. Oswald Dimpré removed it, but not without having to use a pickaxe in this case also. All the spectators were struck with the perfect identity of the patina or coloured crust which covered not only the jaw and the flint axes, but also the rolled pebbles of the bed, and the colour of which, a brown approaching to





M^{re} MACKIE, LITH.

PORTION OF FOSSIL JAW.
FOUND AT MOULIN QUIGNON, 28th MARCH, 1863.
BY M. BOUCHER DE PERTHES.

black, contrasted remarkably with the yellow tint of the gravel beds above and the grey of the underlying chalk. The jaw and the hatchets were about five yards below the surface, and close to the chalk.

A few days later, however (on the 13th of April), Mr. Prestwich, Mr. Evans, and myself, visited M. Boucher de Perthes, and observed circumstances which led us to fear that a deception had been practised by the quarrymen. It appeared to Mr. Evans, on inspection, that the axes had been artificially stained with the iron deposit of the gravel. The external surface of the flints bore evidently the marks of recent fractures, and were distinguishable also by their shape from the well known shapes of Amiens and Abbeville. On being put into water for a time the flint axes looked so much changed that it seemed likely that a good brushing would have brought the whole of the colour away, an opinion confirmed afterwards by experiment. Moreover, the presence of certain flints lying on a heap in the quarry, which flints had evidently been practised upon, did not escape the experienced eye of Mr. Evans. Mr. Prestwich's examination of the bone and teeth led him to suspend any opinion of the genuineness of the relics until he had made further investigations.

M. Boucher de Perthes, however, took a different view of the matter. He said that he had extracted the jaw bone from the substance of the bed itself, and that M. Dimpré had taken out the axe in the same way, in the presence of a number of spectators, and that they felt sure that the gravel had not been in any way disturbed. He had a high opinion of the two men, whom he considered to be persons of irreproachable character.

In the *Abbeillois Journal*, for April 18th, there is a further account of M. Buteux and Mr. Brady, who have also found implements in the same bed. While residents, like M. Boucher de Perthes, have rarely found any object of interest, it seems strange that these gentlemen should have been so fortunate.

On the other side of the question it is to be remarked that M. Boucher de Perthes has for many years offered large rewards for the discovery of fossil remains in the quaternary deposits, and that quarrymen have repeatedly brought him bones which they represented to have been found in undisturbed drift, but which he found to be not genuine. There are, however, bone-bearing gravels not far from Abbeville.

That the quarrymen of Abbeville and Amiens began to make sham drift implements, as soon as it paid them to do so, is well known, and the number of such imitations, which have been sold to unwary tourists, amount to thousands. The skill which these men have attained to in imitating the real drift implements is so great, that only the most experienced observers can be sure of their judgment, and, even then, have often to rely more upon the patina and the discoloration of the surface of the flints than upon the shaping. At one locality the quarrymen offered Mr. Henry Christy, one of the best judges of stone implements in England, a basketful of flint axes, etc. He selected the few genuine ones, and gave a proper price for them, and offered a penny or twopence apiece for the counter-

faits. The men protested and pledged their honour, quite as earnestly as M. Boucher de Perthes' townsmen could have done, that the implements were all genuine, till Mr. Christy quietly suggested that the long winter evenings were just coming on, so that they would have plenty of time to make a fresh batch for the spring tourists. This was too much for them, and they let him take the false implements away at his own price.

Further investigations may possibly prove either that the bone is genuine, or not. At present the discovery cannot be accepted as proved, as there are such strong grounds for suspecting that years of practice in fabricating sham antiquities, with the additional stimulant of the reward offered by M. Boucher de Perthes, have at length enabled the quarrymen to put bones and implements into the gravel so skilfully as to deceive even the Patriarch of Primeval Archaeology himself.

What we want to know is if the colour on the human jaw is merely a tint, or if it permeates the internal structure, and we may hope that this point may be soon settled. It would be well to ascertain the specific gravity of the jaw. It is possible that the human remains may have been obtained from the Roman cemetery at Amiens, or the Merovingian burying ground near Montreuil, from which numerous remains are on sale at Abbeville. The ramus of the Abbeville jaw is more oblique than ordinary, and is incurved, but such forms are not uncommon in Europe, although they may be characteristic of some Australian races.

We should not expect the gravel of Abbeville to be favourable for the preservation of human remains that may have been imbedded in it. It contains no fine sands charged with mollusca in which delicate bones might be preserved.

We saw the fragment of human jaw in the collection of the Marquis de Vitré; but in this case also there is a difficulty, as the marquis had left the cave a few minutes previously to the discovery of the specimen.

NOTICE OF A CASE OF MICRO-CEPHALY.

By R. T. GORE, Esq., F.A.S.L., ETC.

I HAVE much satisfaction in offering to the Anthropological Society a contribution towards the important objects for which it is instituted, and which presents some special points of interest on a subject comparatively new in its scientific relations. Many of the members of the society are, I am aware, well acquainted with the valuable essay of Wagner on the subject (*Vorstudien*, Th. 2), of micro-cephaly; and, therefore, in describing the physical and mental conditions of the

case I now submit, I shall mainly limit myself to description and history, guided by a constant reference to that eminent man's production.

The individual in question, now some years dead, was for a long time (several years), under my own observation. She was a female, the offspring of healthy parents, and without any known instance of idiocy or defective intellect in the family. She lived to her forty-second year, and died of phthisis. Her height was about five feet, her figure slight and rather well proportioned. She menstruated with regularity for some years after puberty, but had ceased to do so for some years before death. As far as I am aware no sexual propensities ever showed themselves.

As regards intellect, the best expression that can be used is to say, that it was infantine; *i.e.* corresponding to that of a child three to four years of age, beginning to talk. She could say a few words, such as, "good," "child," "mama," "morning," with tolerable distinctness; but without connection or clear meaning, and was quite incapable of anything like conversation. Her habits were decent and cleanly; but she could not feed herself, at least with any degree of method or precision. She was fond of carrying and nursing a doll. In walking, her gait was unsteady and tottering, the heels not bearing with any firmness on the ground.

As regards the skull, the photographs will give a better idea of the exterior than any description, though they, perhaps, fail to show the perfection of all the sutures, and the absence of anything like consolidation (*Synostosis*)—a point that negatives the notion that premature consolidation of the bony case has any effective part in bringing about the arrest of development characterizing such cases. The large orbits, with the comparatively narrow inter-orbital space, give some approximation to an ape-like character to the facial region; but, on the other hand, the transverse diameter of the face is proportionally rather large.

The best idea of the interior of the skull will be afforded by the plaster cast exhibited, which is at least fairly correct. The sphenoidal alæ (anterior), are sharply and well defined, as are also the margins of the sella turcica. The petrosal ridge is a good deal elevated, and well marked, with a very deep depression at its mesial and anterior extremity for the lodgment of the Gasserian ganglion. All foramina for nerves, etc. are proportionally large and well marked. The occipital foramen is situated far back, *i.e.*, at a point corresponding to one-fifth of the antero-posterior diameter of the basis cranii, which measures 4.25 inches (say 106 millimetres). The greatest transverse

diameter is 3.25 inches (say 84 millimetres). The occipital foramen is 1.25 inch long (31 millimetres), and 1.125 inch wide (28 millimetres). The crista galli is well marked and projects fairly within the cranium, leaving a rather deep but narrow fossa on each side. The greatest depth of the cranium corresponds to the region of the vertex, and may be taken as 2.625 inches (68 millimetres).

The relations of the brain and cerebellum to each other are shewn by the photographs, due allowance being made for flattening unavoidably consequent on even careful suspension in spirit; though to obviate this, much care was originally taken by well supporting and maintaining a due position on and in a thick bed of horse-hair. The cast of the interior of the skull, though less sharp than could be wished, may also be relied on for the same purpose. Leaving a due estimate of the character and meaning of the cerebral convolutions as well shown in the photographs, I content myself with noting the narrowing of the anterior lobes towards the apex, the comparative breadth of the hemispheres, the well-marked separation of the posterior lobes, and their extreme shortness, whether considered absolutely, or with reference to the portion of cerebellum left uncovered. The length of the *cerebrum* is now, after long maceration in alcohol, 3.1 inches (77 mill.). The extreme breadth of each hemisphere is 2 inches (50 mill.). The length of the posterior lobe from the apex to a well-marked fissure at its inner margin is 1.1 inch (27 mill.). The portion of cerebellum left uncovered is 0.8 inch (20 mill.). The parts of the base of the brain will be seen in the photograph to be well marked and developed in due proportion to the superior parts. The cerebellum is proportionally large, and all its parts well developed, as are, also, the component parts of the medulla oblongata.

The weight of this brain is remarkably small. Carefully weighed when recent, after the membranes and vessels had been removed, it weighed 10 ounces 5 grains (avoirdupois)=4380 grains=283.75 grammes. I see no reason to doubt the correctness of the memorandum made at the time (now some years since), as I find, on again weighing it, after having been long immersed in alcohol frequently changed, that the present weight is $7\frac{1}{2}$ ounces (avoirdupois)=3281.75 grains=212.75 grammes, or less by, say, *circa* one-fourth: a fair correspondence.

I abstain from any attempt to enter upon any estimate of the special development of individual convolutions, or groups of convolutions, as designated by Gratiolet and Wagner, knowing that this

matter will be subject to the observation and judgement of those who are more competent than I can pretend to be, even had I sufficient leisure to enter fully into the needful study of them. For the purpose of such judgement I trust that the photographs will be found available and adequate.

I venture on some remarks that suggest themselves on other points:—

1st. The subject of this case was a female, which appears to be rather exceptional.

2nd. There is a total absence of evidence of disease having been concerned in the production of the micro-cephaly; the bones, sutures, cerebral texture and membranes being perfectly normal.

3rd. The mental condition well corresponds with the idea of arrest of development of the brain at some comparatively early period, probably during intra-uterine existence. As already stated, the mental phenomena were very similar to those of early infancy; contrasting in all respects very strongly to those which we usually associate with the conception of idiocy, in the common acceptance of that word.

4th. The weight of the brain, etc. is unusually small, being 283.75 grammes, as against 300 grammes in Theile's case (Wagner, *Vorstudien* 2, s. 19).

Independent of the cases of micro-cephaly enumerated by Wagner, there are some others that appear to have escaped his notice. One by Spurzheim (*Anatomy of the Brain*, London, 1826), figured as the brain of an idiot girl, at Cork. Of this brain I have a cast, which originally belonged to Spurzheim, and presents the closest resemblance to his figures. This cast is now in the care of Mr. Flower, Conservator of the Museum of the Royal College of Surgeons.

In the appendix to his *Anatomy*, (London, 1830), are figures of another brain of the same character, shewn to him by the late Mr. Stanley. This, no doubt, is one of two brains, with the corresponding skulls, now in the museum at St. Bartholomew's Hospital, and carefully described in the catalogue thereof. The brain of the second (*a*, 123) is of a male, and stated to weigh 13 ounces, 2 drams (avoirdupois)=332 grammes. It has also been described by Professor Owen, "On the Osteology of the Chimpanzee, etc., etc." *Trans. of Zoolog. Society*, vol. i, p. 343.

I conclude by asking the indulgence of the members of the Anthropological Society for these hastily compiled notes on a subject that I am aware is well calculated to interest them.

NOTES ON SIR CHARLES LYELL'S ANTIQUITY OF MAN.*

By JOHN CRAWFURD, Esq., F.R.S.,

PRESIDENT OF THE ETHNOLOGICAL SOCIETY. HONORARY FELLOW OF THE
ANTHROPOLOGICAL SOCIETY OF LONDON.

IN his introductory remarks Mr. Crawford stated that in his observations on Sir Charles Lyell's book he should strictly confine himself to those branches of the subject on which he had bestowed special attention. He stated his conviction that the evidence which of late years had been adduced, giving to the presence of man on the earth an antiquity far beyond the usual estimate of it, is satisfactorily established, and that there can now be no question that man was a contemporary of animals, such as lions, hyænas, elephants, and rhinoceroses, extinct far beyond the reach of human record. Among the evidences brought forward to prove the antiquity of man, the paucity of relics of his own person, compared with the abundance of those the unquestionable work of his hands, has attracted special notice. That scarcity of human remains, compared with those of the lower animals, might, he thought, be to some extent accounted for. In the savage state man is ever few in number compared with the wild animals; and when he first appeared on earth—when naked, unarmed, without language, and even before he had acquired the art of kindling a fire, the disparity must have been still greater. In that condition he would have to contend for life and food with ferocious beasts of prey, with nothing to depend upon but a superior brain. In such circumstances the wonder is, not that he should be few in number, but that he should have been able to maintain existence at all. Sir Charles Lyell adopted the theory of the unity of the human race, which no doubt best accords with the hypothesis of the transmutation of species; but neither he nor any one else has ventured to point out the primordial stock from which the many varieties which exist proceeded. We see races of men so diverse, physically and mentally, as Europeans, negroes of Africa, negroes of New Guinea and of the Andaman Islands, Arabs, Hindus, Chinese, Malays, Red Americans, Esquimaux, Hot-tentots, Australians, and Polynesians. So far as our experience carries us, these races continue unchanged as long as there is no intermixture. The Ethiopian represented on Egyptian paintings four thousand years old is exactly the Ethiopian of the present day. The skeleton of an Egyptian mummy of the same date does not differ from that of a modern Copt. A Persian colony settled in Western India a thousand years ago, and rigorously refraining from intermixture with the black inhabitants, is not now to be distinguished from the descendants of their common progenitors in the parent country. Recent discoveries enable us to give additional evidence of the most instructive kind. Sir Charles Lyell himself stated, "The human skeletons

* Extracted from a paper read before the Ethnological Society, April 14th, 1863.

of the Belgian caverns, of times coeval with the mammoth and other extinct mammalia, do not betray any signs of a marked departure in their structure, whether of skull or limb, from the modern standard of certain living races of the human family." In the same manner the human skeletons found in the pile buildings of the Swiss lakes, and computed by some to be twelve thousand years old, differ in no respect from those of the present inhabitants of Switzerland. If the existing races of man proceeded from a single stock, either the great changes which have taken place must have been effected in the locality of each race, or occurred after migration. Now, distant migration was impossible in the earliest period of man's existence. With the exception of a few inconsiderable islands, every region has, within the historical period, been found peopled, and usually with a race peculiar to itself. To people these countries by migration must have taken place in very rude times, and in such times nothing short of a great miracle could have brought it about. He concluded, then, that there is no shadow of evidence for the unity of the human race, and none for its having undergone any appreciable change of form. If one thousand years, or four thousand or ten thousand years, or a hundred thousand, supposing this last to be the age of the skeletons of the Belgian race contemporary with the mammoth, it is reasonable to believe that multiplying any of these sums by a million of years would yield nothing but the same cipher. Sir Charles Lyell, Mr. Crawford observed, has adopted what has been called the Aryan theory of language, and fancies that he finds in it an illustration of the hypothesis of the transmutation of species by natural selection. The Aryan or Indo-European theory, which had its origin and its chief supporters in Germany, is briefly as follows. In the most elevated table-land of Central Asia there existed, in times far beyond the reach of history or tradition, a country, to which, on very slender grounds, the name of Aryana has been given, the people and their language taking their name from the country. The nation, a nomadic one, for some unknown cause betook itself to distant migrations, one section of it proceeding in a south-eastern direction across the snows and glaciers of the Himalayas, to people Hindûstan, and another in a north-westerly direction, to people Western Asia and Europe, as far as Spain and Britain. The entire theory is founded on the detection of a small number of words, in a mutilated form, common to most, but not to all, the languages of Western Asia and Europe—a discovery, no doubt, sufficiently remarkable, but clearly pointing only to an antiquity in the history of man far beyond the reach of history or tradition. On the faith of these few words, and as if language were always a sure test of race, people bodily and intellectually the most incompatible—the black, and the tawny, and the fair; the ever strong and enterprising, the ever weak and unenterprising—are jumbled into one undistinguishable mass, and, with extraordinary confidence, pronounced to be of one and the same blood. A language which the theorists have been pleased to call the Aryan is the presumed source of the many languages referred to. But the Aryan is but a language of the imagination, of the existence of which no proof ever has been or can ever

be adduced. The Aryan theory proceeds on the principle that all languages are to be traced to a certain residuum called "roots." Some languages either are so, or are made to be so by grammarians. The copious Sanskrit is said to be traceable to some one thousand nine hundred roots, all monosyllables. The languages to which he had given special attention are certainly not traceable to any monosyllabic roots. In their simplest forms, a few of the words of these languages are monosyllables, but the great majority are bisyllabic or trisyllabic, without any recondite sense whatever. But were the Aryan or Indo-European hypothesis as true as he believed it to be baseless, he could not see how it illustrates, or can have any possible bearing at all on the theory of the transmutation of species by natural selection, the progress of which is so slow—if, indeed, there be any progress at all—that no satisfactory evidence of it has yet been produced. The changes in language, on the contrary, are owing to forces in unceasing and active operation, and the evidences are patent and abundant. They consist of social progress, and of the intermixture of languages through conquest, commercial intercourse, and religious conversions. Sir C. Lyell gives it as his opinion that no language lasts, as a living tongue, above one thousand years. As the authentic history of man is not above three times that length, and as, in some quarters of the world, the vicissitudes of language have been unquestionably great, it would no doubt be difficult to produce examples of a much longer duration. The Arabic, however, may be cited as a language which has had a somewhat longer duration, for the Koran is good Arabic at the present day, after the lapse of twelve hundred and forty years; and when the stationary state of society which belongs to East, and the peculiar physical geography of the native country of the Arabs are considered, Mr. Crawford said he saw no reason why it may not have been of twice the duration assigned to language by Sir Charles Lyell. He was told by competent judges that, saving the loss of its dual number and middle voice, modern Greek does not materially differ from ancient; and if such be the case, the Greek language—dating only from the time of Homer (and even then it was a copious tongue)—has lasted some two thousand six hundred years. All the languages of the world have been reckoned by some at four thousand, and by other at six thousand, but it is certain the real number is unknown. As a general rule, languages are numerous in proportion as men are barbarous. As we advance in society they become fewer. This last is the result of the amalgamation of several tongues, and the disappearance of others. There are more languages in Africa and in America than in Continental Asia; and probably as many in Australia, with its handful of Aborigines, as in Europe. In Mexico, the most civilized part of America, and where as far as regards that continent, they are consequently the fewest, there are still twenty native languages. Java, with twelve millions of inhabitants, has but two languages; while in rude and barbarous Borneo, with probably not a tithe of its population, fifty have been counted. He quoted these examples to show that the origin and history of language are a very different thing from what certain learned philologists have imagined

it. The only other portion of the work of Sir Charles Lyell on which he ventured to offer an opinion is that in which he compares man with the apes, placing them anatomically and physiologically in the same category. To begin with the brain. Even if there were no material structural difference between the brain of man and that of the most man-like ape, what would be the practical value of the resemblance, when the working of the two brains is of a nature so utterly different? The brains of the dog and elephant bear no resemblance to the brain of man or ape, or even to those of each other; yet the dog and elephant are equal, if not indeed superior, in sagacity to the most man-like ape. The brain of the wolf is anatomically the same with that of the dog, but what a vast difference in the working of the two brains! The wolf is an hereditarily untameable, rapacious glutton; the dog has been the friend, companion, and protector of man from the earliest period of history. The common hog is an animal of great intelligence, and wants only a pair of hands like the ape's to enable him to make an equal if not a superior display of it to that of the most anthropoid monkey. The sheep and goat have brains not distinguishable; yet the goat is a very clever animal, and the sheep a very stupid one. Is it not, Mr. Crawford asked, from all this an unavoidable conclusion, that between the brain of man and that of the lower animals, and between the brains of the lower animals among themselves, there exist subtle differences which the most skilful anatomy has not detected, and most probably never will detect? In the dentition of man and the ape there is certainly a singular accord. In the old-world apes, the number, form, and arrangement of the teeth are the same; the American monkeys, however, have four additional teeth, or thirty-six instead of thirty-two. The digestive organs also agree. Yet with this similarity man is omnivorous, and the monkey a frugivorous animal, seemingly resorting to worms and insects only from necessity. The teeth of the monkeys are more powerful, proportionably, than those of man, to enable them to crush the hard-rinded fruits by which they mainly subsist, as well as to serve as weapons of defence, for they have no other. Notwithstanding his seemingly dexterous hands, the monkey can neither fashion nor use an implement or weapon. It is his brain, anatomically so like that of man, but psychologically so unlike, that hinders him from performing this seemingly simple achievement. While the similitudes of the monkeys to man are stated, it might be well to state also the dissimilarities. In the relation of the sexes the monkeys are sheer brute beasts. All the different races of man intermix to the production of fertile offspring. No intercourse at all takes place between the different species of monkeys. Man, of one variety or another, exists and multiplies in every climate; for there is hardly a country capable of affording him the means of subsistence in which he is not found. The monkeys are chiefly found within the tropics, and seldom above a few degrees beyond them. In adaptation to the vicissitudes of climate, the monkey is not only below man, but below the dog, the hog, the ox, and the horse, for all those thrive from the equator up to the sixtieth degree of latitude. The natural abode of man is the level earth—that of the

monkeys the forest. If there were no forests there would be no monkeys; their whole frame is calculated for this mode of life. Man came into the world naked and houseless, and had to provide himself with clothing and dwelling by the exercise of superior brain and hands. The monkeys are furnished by nature with a clothing like the rest of the lower animals, and their dwellings are not superior to those of the wild boar, nor for a moment comparable to those of the beaver. All the races of man, however low their condition, have been immemorially in a state of domestication; but the monkeys of every species are as incapable of domestication as the wolf, the polar bear, or the tiger. Man has the faculty of storing knowledge for his own use and that of all future generations; in this respect every generation of monkeys resembles that which has preceded it, and so, most probably has it been from the first creation of the family. The special prerogative of man is language; and no race of man, however meanly endowed, has ever been found that had not the capacity of framing one. In this matter the monkéy is hardly on a level with the parrot or the magpie. It is not true that the anthropoid apes come nearest to man in intelligence. They ought to do so, if they be the nearest to man in the progress of transmutation by natural selection. Professor Huxley has fully and faithfully described four of these anthropoids; and it appears that, among them, those which anatomically approach the nearest to man are the stupidest. If, adopting the theory of the transmutation of species by natural selection, and we believe the gorilla to be the next step to man in the progress of change, it must be taken for granted that the transmutation must have proceeded from the lower to the higher monkeys. Exclusive of the lemurs, there are some two hundred distinct species. Which species is at the bottom of the long scale implied by this number? and has any naturalist ever ventured to describe the long gradation from it till we reach the gorilla? How are the tailed and the tailless monkeys to be classed, and how are we to place the monkeys of the new world, with their four supernumerary teeth? As to the wide unbridged gulf which divides man from the gorilla, no one has more fully admitted it, and so eloquently described it, as Professor Huxley, himself an advocate of the Darwinian theory. The monkeys, then, have an outward and even a structural resemblance to man beyond all other animals, and that is all; but why nature has bestowed upon them this similarity is a mystery beyond our understanding.

FALCONER ON THE REPUTED FOSSIL MAN OF ABBEVILLE.

SIR,—The asserted discovery of a fossil human jaw at Abbeville has already been noticed in *The Times*; it has been the subject of a communication to the Royal Society, and at the present moment it is exciting the most lively interest in the scientific circles of both England and France. Having passed a couple of days at Abbeville with M. Boucher de Perthes closely examining all the circumstances of the case, and having been entrusted by him with some of the specimens, which I have now by me here, I am in a position to throw some light on the subject. The case, as a whole, presents one of the most subtle instances of perplexed evidence on a point of science that has come under my experience, and is well worthy of a hearing from the lesson of caution which it inculcates.

Fashioned flint weapons, unquestionably of very remote antiquity, and as certain proofs of human agency as the watch in the illustration of Paley, have turned up in surprising abundance in the old gravel beds of Amiens and Abbeville, but hitherto not a vestige of the bones of the men who shaped them into form. Why it should be so has remained a mystery; for human bones are as enduring as those of deer, horse, sheep, or oxen, and fossil bones of extinct animals are not unfrequent in the Somme Valley deposits. At last it was thought that the objects so long sought for in vain had been discovered. To pass over minor incidents, on the 28th of March, M. de Perthes was summoned to the gravel-pit of Moulin-Quignon (described by Mr. Prestwich in his memoir in the *Philosophical Transactions*) to examine, *in situ*, what appeared to be a portion of bone projecting from the cliff of the section, close to its base—(*L'Abbeillois*, Avril 9). The specimen was carefully detached with his own hands by M. de Perthes, and proved to be the entire half of an adult human lower jaw, quite perfect, and containing one back tooth—namely, penultimate, or last but one. The sockets of the other teeth were all present, and filled with matrix, with the exception of the antepenultimate, the socket of which was effaced, the tooth having been lost during life. The solitary molar present was hollow from caries, and crammed with matrix.

The deposit from which the jaw was extracted is the "black seam flinty gravel," so called from its intensely dark (blueish-black) colour, arising from oxides of iron and manganese. It rests immediately upon the chalk, and belongs to what Prestwich calls the "high level" series, being the oldest of the Somme Valley beds. A thin cake of black mangano-ferruginous clayey matter is interposed between the chalk and the gravel. If the jaw proved to be authentic, and came out of the alleged position, it indicated man, by an actual bone, at a period of extremely remote antiquity. The appearance of the jaw was entirely in keeping with the matrix—i. e., dark coloured and fairly covered with a layer of it. A single detached human molar was found at the same time, corresponding exactly in appearance and matrix; and, to complete the case, a flint hatchet, covered with black matrix, was extracted from the same spot by M. Oswald Dimpre, who ac-

accompanied M. de Perthes. These details are all given in the *Abbevillois* of the 9th inst.

Two practised experts, Mr. John Evans and Mr. Prestwich, preceded me on the 11th inst. to Abbeville, and their suspicions were instantly aroused. They pronounced the flint hatchets to be modern fabrications. I followed on the 14th, and got three of them out of the "black seam gravel," covered with matrix, and having every external appearance of reliability; but, on severely testing them on my return to London, they all proved to be spurious. M. Quatrefages, member of the Institute, and the eminent professor of Anthropology in the Jardin des Plantes, got two of them in my presence from the same spot on the 15th inst. What they have proved to be I know not as yet, but I anticipate the same results. The number which turned out was marvellous, but the *terrassiers* were handsomely paid for their findings, and the crop of flint-hatchets became in like degree luxuriant.

Now for the jaw itself. What complexion of intrinsic evidence did it yield? The craniological materials available at Abbeville for comparison were, of course, very limited; but the specimen presented a series of peculiarities which are rarely seen *in conjunction* in the jaws of European races, ancient or recent. Here I must be a little technical. 1. The posterior margin of the ascending ramus was extremely reclinate, so as to form a very obtuse angle with the ascending ramus. 2. The ascending ramus was unusually low and broad. 3. The sigmoid notch, instead of yielding an outline somewhat like a semicircle, was broad, shallow, and crescentiform. 4. The condyle was unusually globular; and, 5, what was most remarkable of all, the posterior angle presented what I may venture to call a *marsupial* amount of inversion. The first three characters suggested to M. Quatrefages—if I may venture to cite him for a preliminary impression and not a judgment—the recollection of something corresponding in the jaws of Esquimaux, while the fifth character suggested to me the recollection of what I had seen in the jaw of an Australian savage. Neither of us had at hand the materials requisite for a satisfactory comparison, but the combination of characters above alluded to struck us both as sufficiently remarkable to demand serious examination. M. Quatrefages departed for Paris, taking the jaw with him, while I returned to London, bringing drawings and a careful description with measurements of the principal specimen, and M. de Perthes confided to me the detached molar. I may add that the jaw specimen, although professing to have been yielded from below a heavy load of coarse flints, presented no appearance of having been crushed or rolled; and that, making allowance for the crust of matrix enveloping it, the bone was light, and not infiltrated with metallic matter. The condyle washed yielded a dirty white colour.

As to the result, I have as yet no authentic information of the final conclusions which have been arrived at in Paris. My friends, Mr. Busk, F.R.S., and Mr. Tomes, F.R.S., both practised anthropologists, gave me their assistance in my part of the inquiry. The former, like M. Quatrefages and myself, was struck with the odd conjunction of unusual characters presented by the jaw, and speedily produced a lower jaw of the Australian type, brought by Professor Huxley

from Darnley Island, which yielded the same kind of *marsupial* inversion, so to speak, with a nearly corresponding form in the reclinate posterior margin, ascending ramus, and sigmoid notch. But Mr. Tomes's abundant collection brought the matter speedily to a point. From the pick of a sackful of human lower jaws, yielded by an old London churchyard, he produced a certain number which severally furnished all the peculiarities of the Abbeville specimen, *marsupial* inversion inclusive, although not one of them showed them all in conjunction. We then proceeded to saw up the detached molar found at Moulin-Quignon. It proved to be *quite* recent; the section was white, glistening, full of gelatine, and fresh looking. There was an end to the case. First, the flint hatchets were pronounced by highly competent experts (Evans and Prestwich) to be spurious; secondly, the reputed fossil molar was proved to be recent; thirdly, the reputed fossil jaw showed no character different from those that may be met with in the contents of a London churchyard. The inference which I draw from these facts is that a very clever imposition has been practised by the *terrassiers* of the Abbeville gravel pits—so cunningly clever that it could not have been surpassed by a committee of anthropologists enacting a practical joke. The selection of the specimen was probably accidental; but it is not a little singular that a jaw combining so many peculiarities should have been hit upon by uninstructed workmen.

The break down in this spurious case in no wise affects the value of the real evidence, now well established, but it inculcates a grave lesson of caution.

H. FALCONER, M.D., F.R.S.

(From *The Times* of the 25th April.)

Miscellanea Anthropologica.

Blätter für Gerichtliche Anthropologie, vol. vi, 1856 (Journal of Forensic Anthropology), vol. vi, 1856. On Subjective Light, in relation to Forensic Anthropology.

SEILER (*Nenke's Zeitschrift*, 1839) relates the case of a clergyman who was attacked by two robbers in a pitch-dark night. A severe blow on the right eye caused such an evolution of subjective light, that he was able to recognize one of his assailants.

The question is of some importance in medical jurisprudence, namely, whether the sparks or rays of light, the usual results of pressure on the optic nerve, may, in some particular cases, enable a person clearly to perceive external objects in complete darkness, a question on which physiologists are by no means agreed.

Krügelstein (*Nenke, Zeits.*, 1845) cites a case in which a witness said, "I saw sparks fly from his eye" (the assaulted); here it was an objective light, as a third person saw the evolution of light.

It is related of Tiberius and Cardanus that they could read in the dark immediately on awakening. (Suetonius, *Vit. Tib.*, cap. 68; Plinius, *Hist. Nat.*, lib. xi, cap. 37; Cardanus, *De Subtilitate*, lib. xii.)

Lanzius knew a young man who could see and read in the greatest darkness.

Cumenius (*Miscell. et Ephem. Nat. Cur.*, dec. 1, a. 8, obs. 38) quotes the following case. A young man, a musician, received a blow on the right eye from the breaking of a string, which caused him much pain. In the following night, when he woke, his room was brilliantly lighted up, so that he could perceive the minutest designs on the papered walls. But when he closed the right eye he was in complete darkness. On again opening the right eye, all was light.

Feuerbach tells the same thing of Casper Nause.

Dr. Michaelis, of Leipzig (*Schlichtegroll, Nekrolog der Deutschen*), iii b., p. 337), could, during the last few years of his life, at intervals read in the dark. Kastner (in his *Archiv für die Gesamt. Natur.*, bd. i, p. 68) says that he could spontaneously produce in himself such an electric light, and that on one occasion, after a botanical excursion, he read before his pupils, in perfect darkness, several passages from Hoffmann's *Florer*. Siebentaar (*Handb. de Ger. Med.*, ii, 531) says that he succeeded, by friction and pressure, to produce sufficient light to see for moments the banisters of his stairs in the darkness. From these and similar cases it follows: 1. The human eye possesses the power of evolving sufficient light to enable a person to perceive objects in darkness; 2. That, in medical jurisprudence, the assertion of an individual (such as that of the clergyman) to have seen the assailant is not to be rejected.

Superfœtation. *Southern Medical and Surgical Journal*, 1854, reported by Attaway.

On the 16th of June, 1854, a white woman was delivered of two children. The first was of dark complexion, and presented all the characters of African origin. Not being suspicious of the mother, I was at first inclined to look upon it as an abnormal pigment, or as a case of cyanosis. An hour after a second child was born, with a white complexion, blue eyes, and smooth hair. The contrast was striking. On looking close at the first child I found that the African type was perfect, and so was the Caucasian type of the second child. Subsequently the woman confessed as follows. Five days before her last menstruation she had intercourse with a white man, who was the father of the white child. Three days after (eight days after) she yielded to a negro, who was the father of the second child. She assured me that this was the only coition which had taken between her and the negro. A mare, having been first covered by an ass, and a fortnight after by a stallion, produced in due time a horse filly, and ten minutes after a mule. (*Constat Jahresbericht*, 1859, from a report by Chabaud in *Repert. de Toulouse*.)

On the Influence of the Climate of North America on the Physical and Psychical Constitution. By E. DESOR. (*Centralblatt für Naturgeschichte und Anthropologie*, 1853.)

WHEN a German or Swiss emigrant arrives in New York, the climate appears to him much the same as that of his native country. But if he takes up his residence in that county, he soon finds it necessary to change his mode of life and habits.

It is about two hundred and thirty years since the first colonists arrived in New England. They were all true Englishmen, endowed with all the characters of the Anglo-Saxon race.

Another chief characteristic of the American is the length of the neck; not that it is absolutely longer than amongst us, but appears longer on account of leanness. The Americans again soon recognize the European by the opposite characters. "He is a stranger, look at his neck, an American has no such neck."

The physical difference between the American and European is not only manifest in the muscular system, but also in the glandular system, which especially deserves the attention of the physiologist, as it concerns the future of the American race.

The most intelligent Americans clearly perceive that the increasing delicacy of form (specially in the women) ought, if possible, to be arrested. Despite of their instinctive aversion against the Irish (forming the largest contingent of immigrants), they are aware that the development of the glandular system of that race is well calculated to neutralize the influences of the climate for a considerable time. It has been observed that the finest women are descended from European parents.

The influence of the climate is not merely shown in the descendants, but in the parents. There are few Europeans who get fat in the United States; the Americans, on the contrary, who reside for a considerable time in Europe, become more healthy and portly. This occurs also to the European who, after a lengthened stay in America, returns to Europe. The author (Desor) quotes himself an example of the kind. What still more characterizes the North American is his stiff lank hair. There is a striking contrast in this respect between the Englishman and the American. We look in vain among American children, despite of all the care taken by their mothers, for curly-headed children, so frequently seen in England.

This influence on the hair is probably owing to the dryness of the climate. Hair, as is well known, curls when moist; we are, therefore, not surprised that in England the hair is inclined to curl, whilst it remains lank in America. The hair of the European becomes in America drier, and requires pomatum, etc., to keep it glossy and soft. Hence also there is a very large number of hairdressers in America. (M. Ausland, 1853.) Mention is also made of the want of metal in the voice of Americans, which is also ascribed to the influence of climate.

Every European who arrives at New York, Boston, or Baltimore, will also be struck with that feverish activity the American displays. Everyone is in a hurry; the people don't walk, they run. Something like it is, no doubt, seen in the large commercial towns of England; but the activity of the Englishmen seems more under the control of reason; that of the Yankee is instinctive, at any rate the result of habit, or of an innate restlessness. They even exhibit this accelerated activity during their meals, which, even if they have nothing important to do, are despatched in less than no time.

The author is also of opinion that the use of spirituous liquors is more destructive in the American than in our climate. Europeans who, like the English, are accustomed to strong drinks in their own country, must either renounce the use or limit the quantity of these liquors in America, or they will suffer from them. Hence the large number of temperance societies in America.

At this time the pure English breed is no longer seen among the inhabitants of the United States. A Yankee type has been developed. This type is not the product of intermixture, since it is seen in the most marked form in the Eastern States, where the race is least mixed. External influences must therefore have produced the type. One of the first physiological characters of this American type is an absence of corpulence. On travelling the streets of New York, Boston, Philadelphia, etc., you will, among one hundred persons, scarcely see a portly one, who, moreover, will frequently be found to be a foreigner.

Abolition of Slavery.—The following remarks are forwarded to us by a correspondent, who states that it is a *verbatim* report of a speech delivered at a meeting of a young men's debating society in October last, to advocate the abolition of slavery. We rely fully on the veracity of our correspondent, and give insertion to such a curious *morceau*, which, we fear, but too truthfully exhibits the ignorance which exists in this country respecting negro slavery.

"Mr. Chairman, the proof which I wish to prove this evening is, that it will be for the universal good that the Southern or Free States should conquer the Northern or Slaveholding States; for slavery, to all honest hearts and Christian men, must be an abomination; but above all other Slaveholding States, the Northern States of America have been held up to the execration of the world for their abominable conduct towards, and their atrocities committed on, the wretched Hindoos whom they have so villanously enslaved. But we hope now that retribution is at hand, and the brave Southern general M'Clellan, who is now at the doors of New York clamouring for admittance, and his coadjutor, President Jefferson Davis, will soon burst the bonds that have so long ground down the unfortunate Brahmins, and bound them in chains and fetters in New York dark dungeons and in the "dismal swamps" of Toronto, and restore these unfortunate members of society to that pre-eminence in the social scale of humanity that they have so long been deserving of. Their social life, and the high cultivation that those highly gifted members of the human race have attained to, is too well known to need any further argument upon it. Then, when at length New York and Montreal have yielded to M'Clellan, the commerce of the New World will again be open to the Old, then Europe once more will be able to export cotton to America, and America in turn will be able to export to Europe, wine, frankincense, and myrrh!"

At a recent sitting of the Académie des Sciences, a communication was received from M. de Vibraye on flint implements. He stated that the country round Amiens and Abbeville is not the only part of France where flint hatchets are found; that he had for the last five years been exploring various parts along the banks of the Loire, and had found upwards of a thousand specimens pertaining to the stone period, in about a dozen localities, and that during the last year the department of Loire et Cher had begun to be explored with similar results.

REPORTS OF THE MEETINGS OF THE ANTHROPOLOGICAL SOCIETY.

ORDINARY MEETING, FEBRUARY 24TH, 1863.

THE PRESIDENT read the inaugural address on the Study of Anthropology (see p. 1).

A vote of thanks to the President for his address was proposed by MR. BURKE, seconded by MR. BLACKSTONE, and carried unanimously.

THE PRESIDENT, having intimated that he should be happy to hear any remarks any gentleman might have to offer on the topics touched on in the address,

MR. C. H. CHAMBERS inquired whether the Society had opened any relations with similar societies on the continent.

THE PRESIDENT replied that the subject was under the consideration of the Council, and that a correspondence was at present being carried on with the Anthropological Society of Paris with a view to a mutual exchange of publications.

MR. C. C. BLAKE, Honorary Secretary, drew attention to a most important duty which the Society will be called upon to perform, namely, the appointment of various committees to investigate and report upon special subjects. The principal topics which will be brought before the committees will be the following.

The geographical distribution of man, and the geographical relation of races one to another. The question of acclimatization, which though ably treated of in the President's paper read before the British Association in 1861, still requires much further investigation. The vertical distribution of man, and the influence of great altitudes on certain organs, the respiratory organs, for example. Geological distribution and the nature of the evidences of the antiquity of man, subjects of extraordinary interest, and to the investigation of which a peculiar responsibility is attached. The assistance of the geologist and palæontologist will be required to tell us the number of species of animals found in connection with human remains, and it will be the duty of the Society to prepare a series of tables illustrating this subject. The archæological aspect of man as far as regards the works of art of past ages, as well as of existing nations. Early traditions. As an illustration of the light which zoology may throw on the study of mythi, the suggestion was thrown out that the reason why the inhabitants of Borneo think that man was made from the dust, and the Thibetans that he is descended from the monkeys, is that the Borneans are familiar with large anthropoid apes, and are by no means desirous of claiming descent from such ill-looking creatures, whereas in Thibet monkeys are rare and confined to the smaller species, so that the people have no aversion to thinking themselves allied to them. The migrations of man, chiefly as illustrated by philology. The resem-

blances alleged by Max Müller and others to exist between the languages of widely separated races will be specially taken into consideration. The geographical distribution of disease, and the causes of their appearance and disappearance, branches of anthropology in which the co-operation of the medical members of the Society will be required. The abnormalities of the skeleton, with special reference to the question whether they are more usual in certain races. The subject of the dental varieties of man will early be brought to the notice of the Society. The cerebral organization of man and its relation to inferior types, a subject which it is hoped will be studied with the earnestness and honesty of purpose which it demands, and not with the levity which has lately characterized discussions on it. The structures which man shares in common with other animals; without any reference to the hypothesis of transmutation. Hybridity between so-called races of mankind, and the question whether hybrid races die out, or are physically inferior to others surrounding them. The distribution of human parasites, a subject which seems to throw light on many problems of anthropology, and from the study of which very interesting results may be expected. The historical evidence of the extinction of races. Differences of colour, on which every ethnologist has written, but respecting which our knowledge still rests on very uncertain information. The stature of man. In a recent paper contributed to the Anthropological Society of Paris, it is stated that dwarfs are unknown among negroes. The relative degree of the complexity of the organs of sense; whether, for example, the North American Indians are really endowed with any special sense of smell, or the Negroes with a higher standard of eyesight than ourselves. Mr. BLAKE concluded by remarking on the immense field for research afforded by the science of anthropology, and how little the wide scope of that science and its subordination to the great science of biology have hitherto been appreciated.

Mr. L. BURKE took exception to the stress laid by the President on the collecting of facts, and maintained that a large mass of facts had already been ascertained, from which it would be the duty of the Society to deduce general laws. He also expressed his dissent from the views of the President respecting the untrustworthiness of books of travel.

Mr. S. J. MACKIE, F.G.S., referred to the relations between geology and anthropology, and urged the necessity of carefully tracing the records of man's existence through successive geologic ages.

Mr. J. G. AVERY commended the fairness and moderation of those parts of the President's address touching on matters connected with theology, and expressed his satisfaction at knowing that the objects of the Society were in no way antagonistic to revelation.

Dr. G. D. GIBB, F.G.S., as a medical man, promised his aid in the investigation of the subject of the distribution of disease.

Mr. J. F. COLLINGWOOD, F.G.S., proposed that the President's address be reprinted separately and circulated.

Mr. T. S. PRIDEAUX seconded the proposal, which was carried unanimously.

The PRESIDENT thanked the meeting, briefly replied to Mr. Burke and to a question asked by Mr. Bouverie Pusey; and, in conclusion, referred to what had fallen from Mr. Avery, and stated that the Society was not antagonistic to anything at all, but had purely for its object the investigation of truth.

MEETING OF THE 24TH MARCH, 1863.

SIR CHARLES NICHOLSON, BART., VICE-PRESIDENT, IN THE CHAIR.

THE HON. SECRETARY, Mr. C. C. BLAKE, read a paper by Captain R. F. BURTON, Vice-President of the Society, on "A Day among the Fans." (See p. 43).

Sir CHARLES NICHOLSON proposed a vote of thanks to Captain Burton.

Dr. HUNT drew attention to the reliability of Captain Burton's observations, and to the importance in matters of science of having observers free from preconceived notions. Although the dying out of solitary races is an undoubted fact, we know that races hardly ever die out in their own country; but, when removed from their native place, they degenerate and become extinct, and that independently of drinking and the various other injurious consequences of intercourse with civilized man. A short period of time may make a marked difference with regard to cannibalism among such a people as the Fans; and one man may observe the habit, while another, coming twelve months afterwards, may find no trace of it. Dr. Knox and others have denied the existence of cannibalism; but, independently of the fact that Capt. Burton states that he has seen all but the act of eating, we have credible records of the practice from the sixth century to our own times.

Mr. C. C. BLAKE remarked that Capt. Burton's paper was one of considerable interest to the zoologist, and chiefly because it disproved the alleged correspondence between the distribution of the lowest races of mankind, and that of the anthropomorphous apes. The Fans, inhabiting the same district as the gorilla, are found to possess a self-acquired civilization far superior to that of the southern and coast tribes, who have been long in contact with the white man. It is commonly stated that no men are cannibals unless animal food is extremely scarce; but the Fans are, we are told, amply provided with several descriptions of animal food, and are yet decided man-eaters.

Mr. A. A. FRASER narrated an instance of cannibalism which came under his own observation in the Fiji Islands. Going up the Rewa river in 1853, he saw the body of a man who had been killed, surrounded by a great number of natives: and, when he returned, he saw the people scraping the dark skin off the dismembered limbs of the corpse with shells. The smell of roasting human flesh was so repulsive as to make many of Mr. Fraser's boat's crew sick.

Mr. BURKE thought that the conflicting opinions on extinction of races might easily be reconciled. There is no doubt that solitary

tribes die out, and also races in a certain sense; but the homes or centres of formation of races are, Mr. Burke asserts, maintained.

Mr. E. B. TYLOR said that there is often great difficulty in finding out whether people are cannibals. On the Brass river, within reach of British guns, Mr. Hutchinson and some friends were witnesses of the devouring of a criminal by the friends of the man whom he had aggrieved, although the practice was not previously known to exist in the district. Mr. Tylor also noticed the resemblance between the musical instruments of the Fans and those of the Aztecs and South Americans, and thought that the marimba was imported by the negro into America.

Professor TAGORE stated that the aborigines of India were cannibals, and that the eating of human flesh was a religious ceremony among the present Hindus. The eating of horse flesh as an ordinary article of food was in early ages common in India, but was afterwards elevated into a religious ceremony.

Sir CHARLES NICHOLSON thought it marvellous how people can doubt the existence of cannibalism. He had conversed with many persons who had seen it, and might himself have seen it if he had wished. It appeared generally to be a quasi-religious ceremony. With regard to the extinction of races, Sir Charles Nicholson remarked that the New Zealanders are evidently dying out. War alone was not sufficient to account for the extinction of races; the causes are rather physiological. Among races that are disappearing the men are commonly more numerous than the women, of course causing prostitution and its consequent infertility. Sir Charles thought there was good evidence of the general diffusion in early times, throughout the whole of the southern hemisphere at least, of an ancient negroid race; and that if we ever find a fossil man, he will probably be of that type.

Mr. BOLLAERT mentioned a case of a number of negroes being kidnapped and carried to Easter Island, where they rapidly died out of dysentery and measles.

Mr. BOLLAERT read a paper by Professor RAIMONDI on "The Indian Tribes of Loreto, Northern Peru." (See p. 33).

A vote of thanks was proposed by the Chairman.

Mr. C. C. BLAKE did not understand how a board with a hole in it, fastened into the forehead of an infant in the manner described by Professor Raimondi, could cause a circular elevation of the frontal bone.

Mr. BOLLAERT suggested that the soft parts might protrude.

Dr. DRACHAICHIS was of opinion that the board would be quite capable of producing the effects ascribed to it.

Dr. HUNT regretted the vagueness of Professor Raimondi's statistics, more especially as we have no other information about these tribes of Loreto. He thought the principle of creating necessities one of great importance in dealing with primitive races, and well worthy of the support of the Society.

Sir CHARLES NICHOLSON. It is to be regretted that we have no information on the subject of the language of these people, the rela-

tions of languages being of the highest importance in determining the relations of tribes.

The meeting was then adjourned.

MEETING OF THE 7TH OF APRIL, 1863.

DR. HUNT, PRESIDENT, IN THE CHAIR.

The Honorary Secretary having announced the presents to the Society,

Professor OWEN made some remarks on some human bones discovered under six feet of brick earth at Chatham, and which have been presented to the Society by the Rev. H. F. Rivers. Professor Owen remarked that the bones contain much gelatine, and are therefore probably not contemporaneous with the brick earth in which they are found. The teeth are of the ordinary European type, and so much worn as to be probably characteristic of coarse food. The forehead is low, but whether very unusually low it would be impossible to say until the fragments of the cranium are put together. From the size and strength of development of the ridges for the attachment of muscles the bones appear to be those of a male.

Mr. MACKIE asked whether there was any trace of disturbance of the brick-earth in which the bones were found, and whether any marsh shells were discovered in the brick-earth. The frontal bone appeared to be like that of the Heathery Burn Cave skull.

The PRESIDENT. Further information as to the finding of the bones will be laid before the Society at some future time; but I may state that a stone implement, weighing about fourteen pounds, was found with the remains.

The HONORARY SECRETARY read a paper by Mr. R. T. GORE on "The Microcephalic Brain of a Female Idiot." (See p. 168).

A vote of thanks having been passed, Professor OWEN said:—

The normal organization of the human species is liable, and perhaps more so than that of lower species, to malformation as a consequence of arrest of development; and this is especially the case with the organ the great relative size and complexity of which form the chief characteristic of the human organization, viz., the brain. Instances of this arrest of development are known in different varieties of the human kind, *e. g.*, in the Negro one, as exemplified by the female called by her showman the "Hottentot Venus"; and by the hybrid Spanish and Indian children from San Salvador, called by their showman "Aztecs". But the best recorded cases of such cerebral arrests are those of Europeans, as exemplified by the idiot whose brain is preserved in St. Bartholomew's Hospital; by that whose brain, weighing 1 lb. 4½ oz., is described by Dr. Todd (*Cycl. of Anat.*, vol. iii, art. "Nervous Centres"); and by the still smaller and more remarkable instance of the idiot with the brain weighing only 10 oz. 5 grains, avoird., described this evening by Mr. Gore. No physiological phenomena are of greater interest and importance than those

which tend to directly elucidate the relations of the cerebral organ to the mental phenomena in mankind. Such elucidation is given by these cases of variety, in which the brain and cranium fail to be developed to their normal proportional size; and the one which Mr. Gore has communicated to us is, so far as my research has extended, the smallest instance of a brain, otherwise of sound structure, with which the individual has lived in health beyond maturity to middle age. I would first remark that the brain so arrested in development does not offer a close resemblance to, or correspondence with, that of the chimpanzee, orang, or lower forms. It is, at best, only a general resemblance; such, *e. g.*, as may be due to the arrest of the backward growth of the cerebral hemispheres, falling short of, or not extending beyond, the cerebellum, with the concomitant low development of the included structures, indicated in Dr. Todd's description, in which he remarks, "there could scarcely be said to be any trace of the hippocampus minor." (*Cycl. of Anat.*, vol. iii, p. 719.) The late Dr. Todd has recorded the chief characters of an adult idiot's brain, which he examined in 1844, and which he regarded "as an example of the class of changes which take place in the brains of most idiots." (Art. "Nervous System," Abnormal Anatomy, *Cyclo-pædia of Anatomy and Physiology* vol. iii, p. 719.) The weight of the brain was 1 lb. 4½ oz., avoirdupois, "after having lain in spirits for some days. The upper surface of both hemispheres 'was perfectly smooth'; the convolutions were not (there) developed. The Sylvian fissure was well marked": at its posterior extremity there was a slight puckering, indicating a feeble development of the "insula of Reil." A few fissures and imperfectly developed convolutions were found upon the inferior surface of the middle lobe, and upon the lateral and inferior surfaces of the anterior lobe. The corpora mamillaria appeared to be fused together. "The corpus striatum was exceedingly small."—"The hippocampus major was very small;" and there could scarcely be said to be any trace of the hippocampus minor. "The lateral ventricles were large and rather dilated. The fornix was well developed, as was also the corpus callosum."—"The cerebellum was well developed." The pineal gland was large. Sometimes, as in this case, the foetal condition of non-convolution of the surface of the hemispheres persists; more commonly there are convulsions corresponding in size and depth with the normal human ones, but fewer in number, as in the 'St. Bartholomew's brain,' and in that described by Mr. Gore. But all these cases exemplify the principle that the specific character marks the embryo as essentially as the adult, that the embryo does not pass through lower forms of animals. Just as the toes, as soon as they appear in the human embryo characterize the foot, whilst they bud forth, in the ape, in the direction to form the lower hand. We know that the individual idiots supplying the examples described by Dr. Todd, Mr. Gore and myself (in the St. Bartholomew's case) were the abnormal offspring of parents with the proper human brain, of the average weight. Had any of these perished in a cavern at times when idiots were less cared for than at present, the skull, falling into the hands of the Trans-

mutationist, might have been described, and exhibited at the Royal Institution, as that of the 'missing link;' the idiot 'Aztec' children were two of a family of six, with normal brains, and the parents exhibited no departure from the ordinary size of cranium and capacity of mind. In the absence of special information, and the presence of skulls of Bosjesmen, Hottentots and Negros, corroborating Tiedemann's and Peacock's evidence of the normal size and weight of the brain in those families of the human race, it is to be inferred, or held to be more probable, that the Hottentot Venus was a case of 'arrest of development,' rather than as manifesting the normal character of a lower race linking on the Ape to Man. It is instructive to notice the close analogy of the psychical phenomena in these cases of arrest of development. The 'Aztecs' showed lively but abrupt movements, without obvious aim; the features showed movements devoid of intelligible expression, but with the general actions indicative of internal pleasure or gaiety. When I visited the children in their beds early in the morning, a week after my first inspection of them, they recognized me; I had examined their teeth in the first instance, and the boy pulled down his lip to show them to me, on the second visit. I do not feel justified, however, from this evidence of their recalling an individual to mind, in ascribing to them a good memory. They were fond of beating a little drum and jingling a tambourine. They spoke a few words of English and more of Spanish, but seemed incapable of framing a definite proposition; they were pleased with, and attracted by, any bright object or toy. They had no sense or instinct of shame. The size of the cranium in the female indicated a brain arrested at the stage of that of the Hottentot Venus, figured by M. Gratiolet. The Aztecs were stupidly docile; doing what they were bidden, but not in an intelligent way. Mr. Gore states, in reference to the woman with the still smaller brain, 'Her manners were exactly those of a *very* young child. She could say a few words, and was obedient and affectionate to those about her.' If one were to affirm of such a condition of mind that 'it was not idiocy, not even imbecility,' such a statement would not justify the selection of any of those arrests of cerebral development as the figure by which the true relations of the highest form of brute brain and the lowest normal form of human brain would be illustrated: because, such statement does not truly illustrate the functional powers of the brain stopped short in its development; it merely enables the reader to form a fair judgment of the mental constitution of the propounder and adopter of such statement.

MR. C. C. BLAKE. The case before us is the most striking case of microcephaly on record. The following are the general conclusions arrived at by Dr. Peacock from his investigations on the weight of the brain. "1. The weight of the brain in the adult male averages about forty-nine ounces avoirdupois, and ranges from about forty-two to nearly sixty ounces. In the adult female the weight of the brain averages about forty-three ounces and a half, and ranges from thirty-nine to nearly forty-seven ounces. The mean difference is therefore about five ounces and a quarter. In the previous series of observations, which greatly exceeded in number that now published, the male enceph-

phalon had an average of about fifty ounces; the female of nearly forty-five ounces, or a difference of nearly five ounces and a quarter; and the range was in both sexes more extensive. The average weight of the encephalon in these calculations corresponds, therefore, sufficiently with the previous results, as well as with those obtained by Dr. Reid, and does not differ greatly from the conclusions of Sir W. Hamilton, Dr. Sims, and Dr. Clendinning. The average weight of the brain, as deduced by these observers, ranges from forty-five ounces and three-quarters to fifty ounces and a quarter in males; and from forty-one ounces and a quarter to forty-five ounces in females. The observations of Portal, Tiedemann, M. Leliet, and M. Parchappe, are also similar." The largest brain described by Wagner in his *Vorstudien*, is that of a female, and weighed 1872 grammes; Cuvier's brain weighed 1861 grammes; Byron's, it is said, 1807 grammes, but probably more. The next in size is that of an insane male individual, and weighed 1783 grammes. The smallest healthy male brain on record weighed 1020, and the smallest healthy female 907 grammes. Thus we have both the greatest and smallest amount of brain in the female. Of idiots' brains, in Theile's case it was as low as 300 grammes, and in that preserved in St. Bartholomew's Hospital 322 grammes; but the brain described by Mr. Gore weighed only 283 grammes. Especially remarkable, in this last-mentioned brain, is the very small extent of cerebellum covered by the cerebrum. The cerebellum itself is also very small, and to this was probably due the tottering gait of the woman. Mr. Gore very properly declines to express any opinion on the correlation of the cerebral convolutions; a subject which, except by Gratiolet and Dareste, has hardly been treated so as to conduce to the progress to which we hope we are all tending. But this much is certain, that the external perpendicular fissure, so constant in the quadrumana, is not found in even the earliest-arrested idiot's brain with which we are acquainted.

Mr. ROBERT DUNN, F.R.C.S., said he had when a boy seen the Hottentot Venus, and certainly was not given to understand that her head was unusually small, or that she was deficient in intelligence.

Mr. C. C. BLAKE considered there was most powerful evidence of the idiocy of the Hottentot Venus. Her brain, after it had been some time preserved in spirits, was described by Gratiolet. A zoologist has lately argued, from the readiness with which the woman stripped herself, that she was sane; but surely no one else would consider this as an evidence of sanity.

Professor OWEN said he had seen the skeleton of this woman in the Paris Museum, and, having compared it with those of other Hottentots, was convinced of this being a case of arrested development.

Dr. DRACHAICHIS questioned whether a very small brain necessarily indicated insanity, as one of the largest brains on record was that of an insane person. He contended that want of use was the cause of arrest of development.

Professor OWEN had not before considered it necessary to draw the distinction between idiocy and insanity. Idiocy is the want of ability to originate or conceive of general propositions; but in insanity

general propositions are most readily produced, but are wrongly combined. Want of use is most certainly not the cause of arrest of brain-development. Brothers are the best instructors; and the Aztec children had such older than themselves and sane.

Mr. BURKE thought that the negro blood in the Aztec children might easily have been known by the curly hair; the type of features was somewhat Jewish. The liveliness of the children, inherited from their Indian forefathers, illustrated the rule that idiots manifest the characteristics of the race to which they belong.

Mr. BOLLAERT thought it very unlikely that there was any Jewish blood in these Aztecs; if they had come from New Granada, it might have been less improbable.

Dr. HUNT remarked on our ignorance of the causes and limits of reversion to an ancestral type psychologically, if not anatomically; and insisted on the great importance, in such cases as Mr. Gore's, of getting full information as to the parents and other relatives of idiots.

Mr. BURKE said we can limit the reversion to type, and that no one ever heard of any one case of reversion out of a race.

The DUKE OF ROUSSILLON mentioned a case of type of features being preserved for ten centuries in his own family; and also of certain towns in Italy where the inhabitants are decidedly of the Saxon type.

Mr. PRIDEAUX said, with regard to the Neanderthal cranium, a cast of which was exhibited, that he saw no evidence of idiotcy in the shape of the skull, the capacity being apparently very considerable.

Mr. C. C. BLAKE considered the Neanderthal cranium too fragmentary to allow of any safe estimate of its capacity being given. There appeared to be a considerable resemblance between the occiput of that skull and that of the skull of the idiot whose brain Mr. Gore had described. The large size of the orbits of the latter skull is also remarkable.

The PRESIDENT adjourned the meeting.

APRIL 21ST, 1863.

(The reports of this meeting will be inserted in the second number of the *Anthropological Review*.)

The HONORARY SECRETARY read the following extracts from a letter from M. Paul Broca, Secrétaire-général to the *Société d'Anthropologie de Paris*, addressed to Dr. James Hunt, President of the Anthropological Society of London.

"DEAR SIR,—A long time ago, I received the letter in which you announced to me the foundation of the Anthropological Society of London, to which I certainly should have replied at once, to express to you all the interest which I take in your work. . . . Such was, my dear colleague, the cause of the delay of my reply. But your letter, which I received this morning, has caused my regret that I did not

write to you sooner. Have the kindness to accept my apologies. You cannot doubt the satisfaction with which the Paris Society has learnt that you are about to found in London a society established on the same bases as our own, and which we shall consider as our sister-society. The Paris Society does not feel any doubt respecting the success of an undertaking directed by a man like yourself. At London, as at Paris, experience has demonstrated the insufficiency of the Ethnological societies. Ethnology is merely one of the branches of Anthropology. To give to the study of man all its development, to create a veritable science, it is necessary to regard it under every point of view, and bring to bear at the same time the resources of anatomy, physiology, hygiene, ethnology, philology, history, archaeology, and palæontology. Since we founded at Paris a Society of Anthropology, we believe that we have been justified by experience, and that the necessity of comprehending all these studies under one head, to make them lead towards one object, will not long remain unrecognized. Already MM. Wagner and von Baer have organized in Germany *Anthropological Congresses* which will become periodical. The Anthropological Society of London will fulfil the same task; and we have the firmest hopes that, after the conclusion of the American crisis, the *savants* of the United States will in their turn experience the desire to organize a society of anthropology. . . . I am highly flattered that you should have considered that the translation of my *Mémoire sur l'Hybridité* may prove of service. In this respect, I give you the fullest powers. If you think it right that some passages should be abridged or suppressed, you can do so at your pleasure, and I shall remain at your service to correct the proofs. Thursday next, the committee propose to establish with your society a regular exchange of publications, and to give to this measure a retroactive application since the establishment of our society. With fresh expressions of my excuses, Agréez, mon cher collègue, &c.

“Le Secrétaire-général, BROCA.

“To Dr. James Hunt, F.S.A.,
President of the Anthropological Society of London.”
